



**Ameren Illinois Company d/b/a  
Ameren Illinois**

**MODERNIZATION ACTION PLAN  
Infrastructure Investment Program  
2012-2021**

**Attachment 2: 2016 Plan**

**April 1, 2016**

## Table of Contents

<b>Executive Summary .....</b>	<b>5</b>
2016 Plan Overview.....	5
Summary 2016 Plan Scope .....	8
Infrastructure Improvements.....	8
Training Facilities .....	13
Distribution Automation .....	14
Advanced Metering Infrastructure (AMI) .....	17
Volt/VAR Optimization.....	18
Software and Technology Enhancements: .....	19
Summary 2016 Plan Schedule .....	20
Summary 2016 Plan Capital Investments .....	20
Summary 2016 Program Staffing .....	20
Summary 2016 Plan Units of Work.....	20
 <b>Section 1: Infrastructure Improvement Investments .....</b>	 <b>21</b>
Section 1.A: Replace Primary Distribution Substation Reclosers .....	21
Section 1.B Substation Animal Protection.....	25
Section 1.C: Bulk Substation Improvements .....	29
Section 1.D: Distribution Transformer Reserve. ....	33
Section 1.E: Tie Line Capacity – Line 6973 .....	37

Section 1.F.: Substation Low Side Auto Transfer .....	40
Section 1.G: High Voltage Distribution Pole Reinforcement.....	44
Section 1.H: Replace High Voltage Distribution Breakers .....	48
Section 1.I: Spacer Cable Program .....	52
Section 1.J: Rebuild Primary Distribution Lines .....	56
Section 1.K: Primary Distribution Lines Capacity Additions .....	60
Section 1.L: Bulk Transformer Outage Mitigation.....	64
Section 1.M: Rebuild High Voltage Distribution Lines .....	68
Section 1.N: Expand Bulk Supply Substations.....	72
Section 1.O: Underground Primary Distribution Cable.....	75
Section 1.P: System Tie Primary Distribution.....	79
Section 1.Q: CERT Remediation.....	83
Section 1.R: Infrastructure Improvement Summary .....	84
<b>Section 2: Training Facilities .....</b>	<b>86</b>
Section 2A: Training Facilities .....	86
<b>Section 3: Distribution Automation Programs.....</b>	<b>87</b>
Section 3.A: Primary Distribution Automation .....	87
Section 3.B: Communication Infrastructure .....	91
Section 3.C: High Voltage Distribution Relaying .....	94
Section 3.D: Distribution Substation Metering.....	98
Section 3.E: High Voltage Distribution Automation.....	102

Section 3.F: Test Bed.....	106
Section 3.G: Underground Network Modernization.....	106
Section 3.H: Distributed Energy Resource Integration.....	110
Section 3.I: Distribution Automation Summary .....	114
<b>Section 4: Advanced Metering Infrastructure (AMI) .....</b>	<b>116</b>
<b>Section 5: Volt/VAR Optimization .....</b>	<b>120</b>
Section 5.A: High Voltage Volt/VAR Control .....	120
Section 5.B: Primary Distribution Volt/VAR Control.....	124
Section 5.C: Volt/VAR Optimization Summary .....	127
<b>Section 6: Software and Technology Enhancements .....</b>	<b>129</b>
Section 6.A: Advanced Distribution Management System (ADMS) .....	129
Section 6.B: Replace Distribution Engineering Workstation (DEW) .....	129
Section 6.C: Software and Technology Enhancements Summary.....	132
<b>Appendix A: Summary-Level Plan Information.....</b>	<b>134</b>

## **Executive Summary**

### **2016 Plan Overview**

On January 3, 2012, Ameren Illinois Company (“AIC”) filed its proposed performance-based formula rate, Modernization Action Plan - Pricing (“Rate MAP-P”), with the Illinois Commerce Commission (“Commission”) pursuant to Section 16-108.5 of the Public Utilities Act (“Act”). The Commission commenced Docket No. 12-0001 to review that filing. In making that filing, AIC confirmed that it elected to become a “participating utility”, and committed to undertake the investments described in Section 16-108.5(b) of the Act. Section 16-108.5(b) also calls on AIC, within 60 days of such filing, to submit a plan for satisfying its infrastructure investment program commitments pursuant to subsection (b), which must include a schedule and staffing plan for the current and next calendar year. On March 2, 2012, AIC submitted its original plan for the calendar year 2012 and 2013. In 2013, 2014, and again in 2015, AIC submitted detailed plans the current calendar year. For information purposes, annual updates to the infrastructure investment plan are prescribed by the Act.

Accordingly in 2016, AIC submits to the Commission a revised 2016 Infrastructure Investment Program, hereafter referred to as the Plan. The 2016 Plan organizes individual projects under two broad categories of investment (Infrastructure Related and Smart Grid). AIC has further broken these down into six more detailed areas (Infrastructure Improvements, Training Facilities, Distribution Automation, AMI, Volt/VAR Optimization, and Software & Technology Enhancements).

**Infrastructure Related Investments:** This section of the Plan sets forth electric system upgrades, modernization projects, and training facilities. AIC has further broken this down into two subcategories:

*A. Infrastructure Improvements*

*B. Training Facilities*

**Smart-Grid Related Investments:** This section of the Plan describes the Smart Grid electric system upgrades, distribution infrastructure upgrades and modernization of these systems. AIC has further broken this up into four subcategories.

*A. Distribution Automation*

*B. AMI*

*C. Volt/VAR Optimization*

*D. Software and Technology Enhancements*

The 2016 Plan includes a projected cumulative total of \$42.7 million of incremental capital investment and associated expense in electric system upgrades, modernization projects, and training facilities (“Infrastructure Related Investments”). The 2016 Plan also includes a projected cumulative total of \$64.2 million of incremental capital investment and associated expense in “Smart Grid” electric system upgrades.

As required by Section 16-108 (b), the total projected \$106.9 million of cumulative incremental capital investment under the 2016 Plan will be incremental to AIC’s annual capital investment program, as defined in Section 16-108.5(b). That is, as part of this 2016 Plan, AIC will invest a projected cumulative total of at least \$106.9 million more capital than a capital investment program that invested at an annual rate defined by AIC’s average capital spend for

calendar years 2008, 2009, and 2010 as reported in AIC's applicable Federal Energy Regulatory Commission ("FERC") Form 1s.

The information provided within the 2016 Plan contemplates investments that AIC currently proposes to make in 2016 pursuant to Section 16-108.5 of the Act. All investments and amounts shown are subject to revision as AIC refines and adapts its 2016 Plan in light of future analysis, findings, and circumstances.

In the event that Section 16-108.5 becomes inoperative or Rate MAP-P is terminated, then the 2016 Plan, including but not limited to all programs and investments, will also become inoperative and terminate immediately, which is permitted by law.

## Summary 2016 Plan Scope

### Infrastructure Improvements

These programs are described in Section 1 and include, but are not limited to, the following specific programs. A brief overview of each program is described below, with a detailed description of each in Section 1.

- A. Replace Primary Substation Distribution Reclosers.** This program is projected to replace 32 primary distribution substation reclosers in 2016. These three phase oil reclosers or breakers will be replaced with modern single phase vacuum tripping devices. This work will provide reduced outages during single phase faults and modern relaying will provide tighter coordination and fault locating capabilities. Engineering will also commence for future projects.
- B. Substation Animal Protection.** This program is to install electric or passive animal resistant fences around susceptible equipment inside substations. In 2016, AIC projects to complete 10 substation animal protection projects. Engineering will also commence for future projects.
- C. Bulk Substation Improvements.** This program involves improving designated bulk supply substations to minimize large double bus outages due to a single contingency equipment failure. In 2016, AIC projects to complete 3 projects under this program. Engineering will also commence for future projects.
- D. Distribution Substation Transformer Reserve.** This program will add distribution substation transformer reserve to select substations by adding a

second transformer, upgrading transformers in a two unit station, re-enforcing existing distribution feeder ties, and/or constructing new distribution feeder ties. In 2016, AIC will complete 2 Distribution Substation Transformer Reserve Projects. Engineering will also commence for future projects.

**E. Ties Capacity – Line 6973.** This program will implement system upgrades needed to provide a reserve tie or loop feed with 69 kV high voltage distribution Line 6973, which is presently a radial line serving a peak load of roughly 42 MVA. This line originates at the Bush substation and serves the following substations: Morton-Cat, North Morton, Central, Southwood, Tazewell, Mindale, Armington, Burt, and Corn Belt Hoopdale. The scope of work required will include building a new bulk supply substation and reconductoring several miles of 69 kV line. Engineering and investment for this program commenced in 2016. Construction will begin in 2016 with completion projected for 2017.

**F. Substation Low Side Auto Transfer.** This program will add low side 12kV transformers and tie breakers to allow automatic low side transfer in some larger distribution substations with two or more transformers. AIC has over 150 substations 34 or 69kV high side, > 10.0 MVA with more than one transformer. A large percentage of these stations have no automatic transfer to the alternate transformer and bus in the event of a transformer or arrester fault. Many existing stations have the physical room for the additional breakers. 2 projects are projected to be completed under this program in 2016. Engineering will also commence for future projects.

- G. High Voltage Distribution Pole Reinforcement.** This program provides for the replacement of select wood poles with high strength poles, installation of additional high strength poles, or reinforcement of select wood poles on high voltage distribution lines. Hardening these select high voltage distribution lines will limit the likelihood of cascading failures due to extreme transverse loading. 96 poles are projected to be replaced/installed under this program in 2016. Engineering will also commence for future projects.
- H. Replace High Voltage Distribution Breakers.** This program replaces aging high voltage distribution breakers. 3 breakers are projected to be replaced under this program in 2016. Engineering will also commence for future projects.
- I. Spacer Cable Program.** This program entails the replacement of designated primary distribution spacer cable. There are approximately 3.9 miles of spacer cable projected to be replaced in 2016. Engineering will also commence for future projects.
- J. Rebuild Primary Distribution Lines.** This program plans to rebuild and/or reconductor primary distribution circuits. Lines or portions of lines would be selected based on reliability history, customer counts, and system improvement possibilities. In 2016, AIC projects to rebuild approximately 9.2 miles of primary distribution under this program. Engineering will also commence for future projects.

**K. Primary Distribution Line Capacity Additions.** This program is designed to rebuild existing lines for additional capacity, or build new lines to split existing loads. 4 projects are projected to be completed to add additional capacity on AIC primary distribution circuits in 2016 under this program. Engineering will also commence for future projects.

**L. Bulk Transformer Outage Mitigation.** The program is to provide system reinforcements by installing a second bulk supply transformer, building a new bulk supply substation, or reconductoring high voltage distribution lines to provide the system redundancy required to facilitate system maintenance and avoid load curtailments during a bulk substation transformer outage. In 2016, AIC projects to complete 1 project under this program. Engineering will also commence for future projects.

**M. Rebuild High Voltage Distribution Lines.** The objective of this program is to rebuild and/or reconductor high voltage distribution lines. Factors such as pole/structure condition, deteriorated conductor, static wire condition, accessibility for repairs, line loading relative to thermal limits, and outage history will be considered in selecting and prioritizing the high voltage distribution lines to reconductor or rebuild. In many cases, the scope of work may be limited to a portion of a line or targeted to address a specific reliability concern such as pole failures or lightning related outages. There are approximately 15.8 miles of high voltage distribution line rebuild planned for 2016. Engineering will also commence for future projects.

**N. Expanded Bulk Supply Substations.** This program will construct new bulk supply substations (e.g., 161/69 kV, 138/69 kV, and 138/34.5 kV) or install new bulk supply transformers at existing substation locations. This work will also include implementing associated line and equipment reinforcements. 2 projects are planned to be completed in 2016. Engineering will also commence for future projects.

**O. Underground Primary Distribution Cable.** This program is designed to replace or remediate through injection, select primary underground cable. In 2016, AIC projects to replace or inject approximately 3.3 miles of primary underground cable. Engineering will also commence for future projects.

**P. System Tie Primary Distribution.** This program plans to build or reconductor primary distribution circuits to be able to tie adjacent circuits together for better operating efficiency and reliability. In 2016, AIC projects to complete 5 miles under this program. Engineering will also commence for future projects.

**Q. CERT Remediation.** This program specifically targets existing and potential Customers Exceeding Service Reliability Targets (CERT) for remediation each year. There is no planned investment in this program for 2016.

## **Training Facilities**

This program provided for the purchase and renovation of a training facility in the Belleville area to facilitate electric, relay, and smart grid training. The facility consists of indoor and outdoor training space that provides state of the art classroom facilities in addition to hands-on training with physical equipment. This program also included enhancements to our current electric training facility in Decatur as well as the purchase of additional office space required to assist in accommodating a portion of the staffing needs set out in the bill. A more detailed description of this program including scope, schedule, capital expenditures, and staffing are included in Section 2 of this document. These projects were substantially completed in 2013. There are no additional planned investments under this program in 2016.

## **Distribution Automation**

These programs are described in Section 3 and include the following programs. A brief overview of each program is shown below, with a detailed description of each set forth in Section 3.

**A. Primary Distribution Automation** - This program will install both line and substation primary distribution level automation schemes to promote automatic fault isolation and service restoration. For 2016, there are 59 primary distribution automation projects projected. Engineering will also commence for future projects.

**B. Communication Infrastructure** – This program is designed to build the communication infrastructure to support Smart Grid devices and functions. It is considered an enabling program for other projects so units are not tracked. In 2016, the communication infrastructure will be extended to support the 2016 Smart Grid projects. Engineering will also commence for future distribution automation project support.

**C. High Voltage Distribution Relaying.** This program is designed for replacement of select electro-mechanical relays with microprocessor based relays on AIC's high voltage distribution system. Benefits include enhanced coordination opportunities and fault location capabilities. There are 21 relay terminals projected to be replaced in 2016. Engineering will also commence for future projects.

**D. Distribution Substation Metering.** This program adds distribution substation transformer and circuit load metering that will remotely read and report. There are 15

projects projected for this program in 2016. Engineering will also commence for future projects.

**E. High Voltage Distribution Automation.** This program is designed to install smart switching devices on select high voltage distribution lines and place strategically located Fault Circuit Indicators (FCI) to facilitate fault isolation and faster restoration of service to the remaining load. In 2016, there are 19 High Voltage Distribution Automation projects projected to be completed. Engineering will also commence on future projects.

**F. Smart Grid Test Bed -** The intent of this Smart Grid Test Bed program was to establish the necessary infrastructure, processes, and resources to implement the Smart Grid Test Bed requirements of the Act. The Test Bed provides applicants the opportunity to test Smart Grid related equipment, services and business models within a utility scale environment. Applicants are allowed to have equipment connected to the utility grid for the purpose of demonstrating that the equipment or systems function as designed. The Test Bed will validate applicant sponsored business models or services by testing the functional aspects of specific equipment or verification that services/business models provide the intended results based upon the applicants proposals. The Smart Grid Test Bed program also established the necessary infrastructure to perform AIC sponsored testing of electric distribution system equipment. There are no planned investments in this program in 2016.

**G. Underground Network Modernization** - This program is to replace the 1950 vintage network protectors with modern solid state network protectors. The new protectors will have SCADA remote communication and monitoring capabilities. This will ensure the safe isolation of network faults and allow for maintenance without time consuming switching or arc flash mitigation. There are 26 network protectors projected to be replaced in 2016. Engineering will also commence on future projects.

**H. Distributed Energy Resource Integration** – This program is to install at and in the vicinity of Ameren Illinois' Technology Applications Center (TAC) in Champaign Illinois distributed energy resources (battery storage, solar, wind, and natural gas generation), demand management systems, communication and control systems, and associated distribution lines, transformers, and switchgear to provide the Smart Grid enabling infrastructure to test distributed energy resource control, integration, dispatch, system islanding, microgrid functionality, and local demand management.

There is one project planned in 2016 by installing distributed energy resources (DER) at the TAC site, plus the necessary transformer, switchgear, conductor, and control technology to interconnect and operate. 2017 will include installation of additional battery storage, distribution tie-points, and switchgear.

## **Advanced Metering Infrastructure (AMI)**

A brief overview of this program is described below, with a more detailed description set forth in Section 4.

- A. AMI.** This program involves the planned replacement of 62% of the retail electric meters on the AIC distribution system with Advanced Meters. This program include deployment of an Advanced Metering Infrastructure (AMI), which provides a two-way communications infrastructure to support the metering functions and other customer service applications such as remote disconnect. Expected benefits include reductions in projected bills, unaccounted for energy, and consumption on inactive meters. Deployment of Advanced Meters will occur pursuant to the most current Advanced Metering Infrastructure Deployment Plan (“AMI Plan”) filed with the ICC.

## **Volt/VAR Optimization**

These programs are described in Section 5 and include, but are not limited to, the following specific programs. A brief overview of each program is shown below, with a detailed description of each set forth in Section 5.

- A. High Voltage Volt/VAR Control.** This program is to facilitate dynamic voltage control and optimal reactive power flow on the high voltage distribution system. Generally this involves installing remote switching capability and control on bulk supply transformers load tap changers (LTC's), switching capacitor banks, and controlling bulk supply voltage regulators using a computerized technology solution. The initial focus is to ensure all switch high voltage distribution capacitor banks have SCADA control and voltage indication. There are 12 projects planned to be completed in 2016. Engineering will also commence for future projects.
- B. Primary Distribution Volt/VAR Control.** This program is intended to provide dynamic voltage control and optimal reactive power flow. The program will focus on a Volt/VAR Optimization (VVO) deployment across several AIC primary distribution level (<15kV) circuits by controlling switching capacitor banks, voltage regulators, and possibly transformer load tap changers (LTCs) using a VVO computerized control technology solution. This may require the addition of current/voltage monitoring, SCADA at each LTC, voltage regulator, and switched capacitor bank location. There are no projects projected to be completed under this program in 2016. Engineering is ongoing for future projects.

## **Software and Technology Enhancements:**

These programs are described in Section 6 and include, but are not limited to, the following specific programs. A brief overview of each program is shown below, with a detailed description set forth in Section 6.

**A. Advanced Distribution Management System (ADMS).** AIC implemented an ADMS in order to replace its existing Distribution SCADA System (DDOS) and its Outage Analysis System (OAS). The ADMS system is a fully integrated suite of applications that provides distribution system operators with a common user interface to monitor, control, and manage the electric distribution system and smart devices throughout the distribution system. Phase three of this program began in 2012 and consisted of a three cycle implementation. The SCADA portion was implemented in the 3rd quarter of 2012, the DMS mapping was implemented in 4<sup>th</sup> quarter of 2012 with additional DMS functionality implemented in the 2<sup>nd</sup> quarter of 2013. The outage portion was completed in late 2014. There are no planned investments under this program in 2016.

**B. DEW Replacement.** This project is to replace the current engineering analysis tool which is called Distribution Engineering Workstation (DEW). This tool has limitations related to circuit balancing, capacitor bank placements, and voltage drop calculations. Replacement with a state of the art engineering analysis tool will effectively enable implementation of many of the smart grid programs which require distribution engineering analysis as part of the proposed project design. This program commenced in 2015 and is expected to be completed in 2016.

## **Summary 2016 Plan Schedule**

The program schedule explains the planned flow of work within each program over the course of the year. Each schedule represents an annual work plan containing a high level task list. It is recognized that scope priorities will be adjusted over the course of the year as new information is obtained. Detailed 2016 planned schedules for specific program areas are provided in the sections that follow.

## **Summary 2016 Plan Capital Investments**

The program capital projection identifies the planned monthly capital cost for each program. The 2016 Plan investment total is projected to be \$106.9 million in incremental capital investments plus associated expenses.

## **Summary 2016 Program Staffing**

AIC will calculate FTEs in accordance with Appendix A of the revised Modernization Action Plan, Infrastructure Investment, 2012-2021 submittal for 2016.

## **Summary 2016 Plan Units of Work**

The program quantity of units describes the projected number of work units, where applicable, that are planned to be completed in 2016 for each program area. Units of work for each program are discussed, as applicable, in that program's respective section of the Plan.

## **Section 1: Infrastructure Improvement Investments**

### **Section 1.A: Replace Primary Distribution Substation Reclosers**

#### **1.A.1: 2016 Program Scope**

Replacement of select three phase hydraulic reclosers or breakers with single phase vacuum devices with modern relaying is expected to reduce CI by isolating single phase faults rather than tripping all three phases. Replacement of the aging hydraulic reclosers or breakers is also expected to reduce the failure rate and reduce future maintenance expenditures.

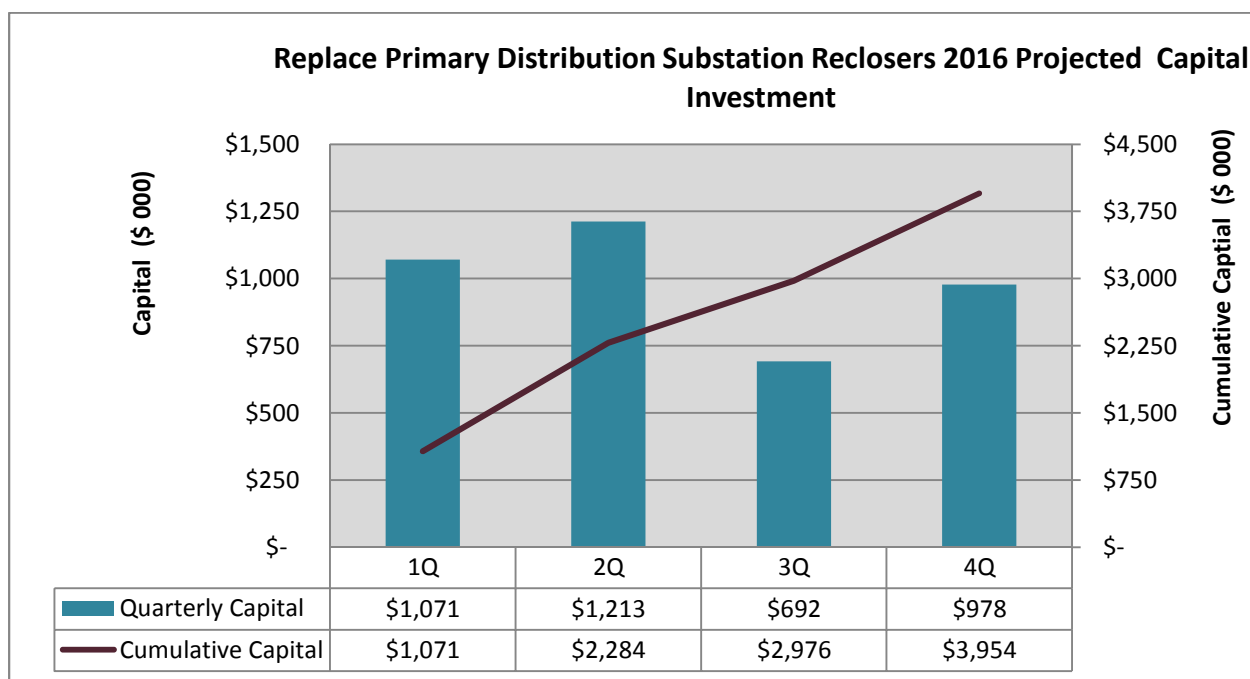
The breakers were generally selected on the basis of:

1. Greatest number of customers
2. Single phase tripping acceptability
3. Criticality of load
4. Maintenance history of recloser
5. Fault duty
6. Upcoming scheduled recloser maintenance
7. Workload management

## 1.A.2: 2016 Program Capital Investments

Figure 1.A.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program capital costs to be \$4.0 million plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

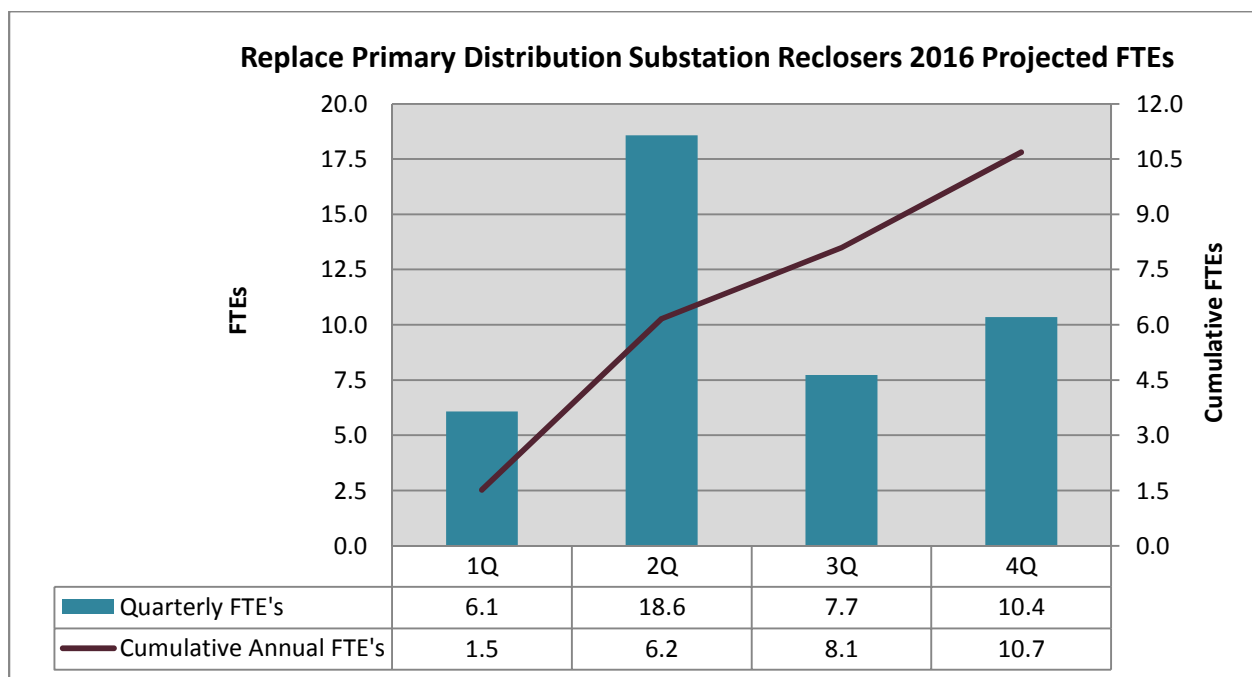
**Figure 1A.2: Replace Primary Distribution Substation Reclosers 2016 Capital Investments**



### 1.A.3: 2016 Program FTEs

Figure 1.A.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision, and craft.

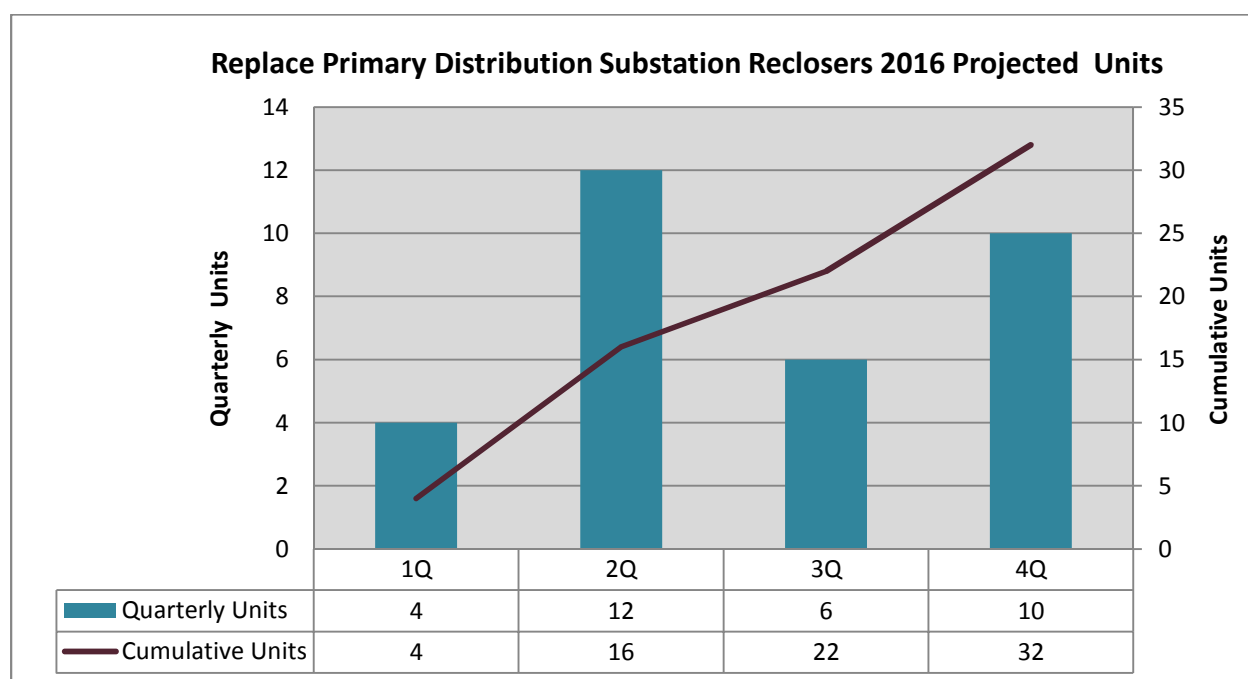
**Figure 1.A.3: Replace Primary Distribution Substation Reclosers 2016 FTEs**



#### 1.A.4: 2016 Program Schedule/Units

Figure 1.A.4 shows the number of reclosers projected to be installed under this program in 2016. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.A.4: Replace Primary Distribution Substation Reclosers 2016**



## **Section 1.B Substation Animal Protection**

### **1.B.1: 2016 Program Scope**

This program is to install animal protection for the designated substations by the installation of electrical or passive animal fences to mitigate animal caused substation outages. Passive fences are used where the substations have insufficient room for an electric fence to be located safely between the equipment and the safety fence.

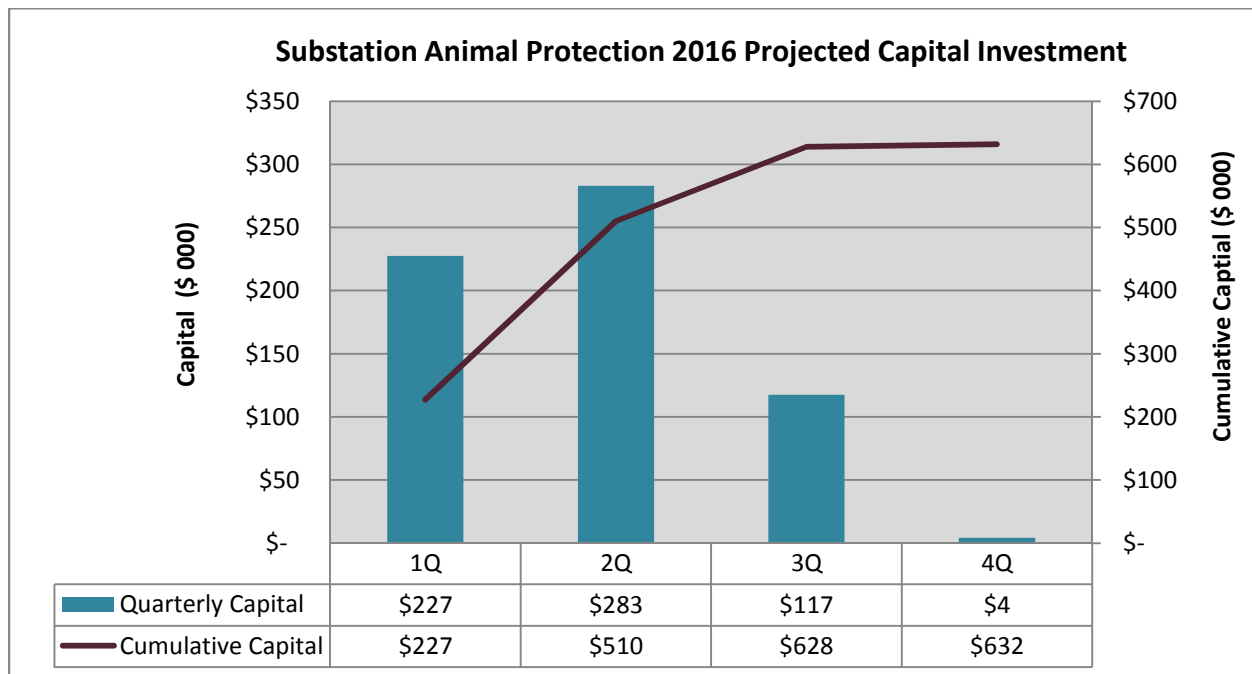
The substations to have animal fences installed were generally selected by the following criteria:

1. Greatest number of customers.
2. Criticality of the load
3. Outage history
4. Site evaluation
5. Workload management

## 1.B.2: 2016 Program Capital Investments

Figure 1.B.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be \$0.6 million in capital investment plus associated expenses. Estimates of cost, units of work and schedules for that work may evolve over time.

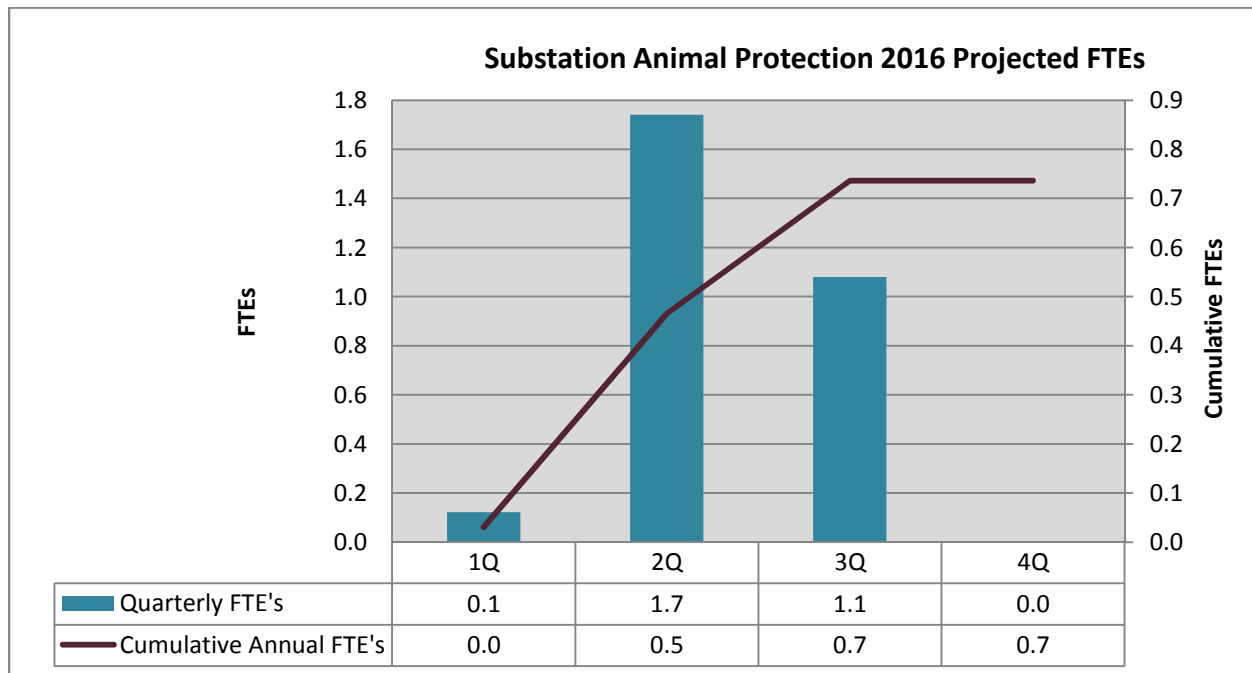
**Figure 1.B.2: Substation Animal Protection 2016 Capital Investments**



### 1.B.3: 2016 Program FTEs

Figure 1.B.3 represents the projected FTEs required to perform the scheduled scope of work under this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision, and craft.

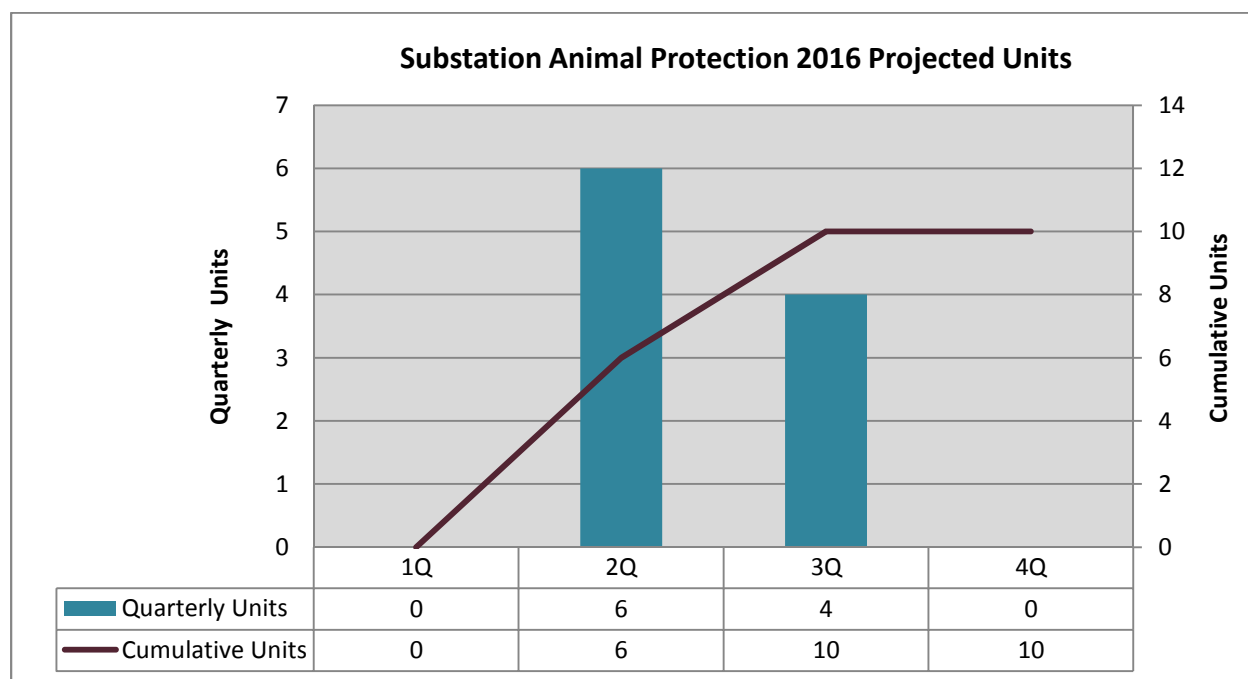
**Figure 1.B.3: Substation Animal Protection 2016 FTEs**



### 1.B.4: Program Units/Schedule

Figure 1.B.4 shows the projected number of substations protected under this program in 2016. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.B.4: Substation Animal Protection 2016 Units**



## **Section 1.C: Bulk Substation Improvements**

### **1.C.1: 2016 Program Scope**

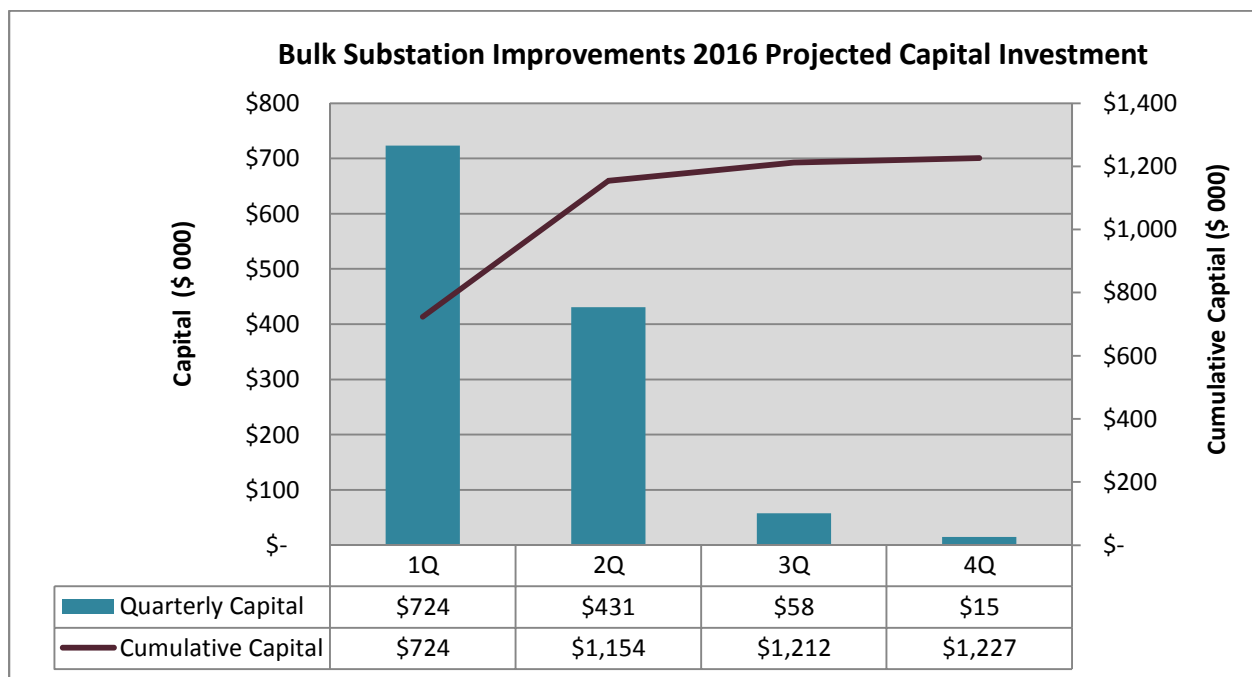
This program involves improving designated bulk supply substations to minimize large double bus outages due to a single contingency equipment failure. Projects were generally selected based on the following criteria.

1. Criticality of load.
2. Number of connected customers.
3. Improvements in operating flexibility.

## 1.C.2: 2016 Program Capital Investments

Figure 1.C.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.2 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

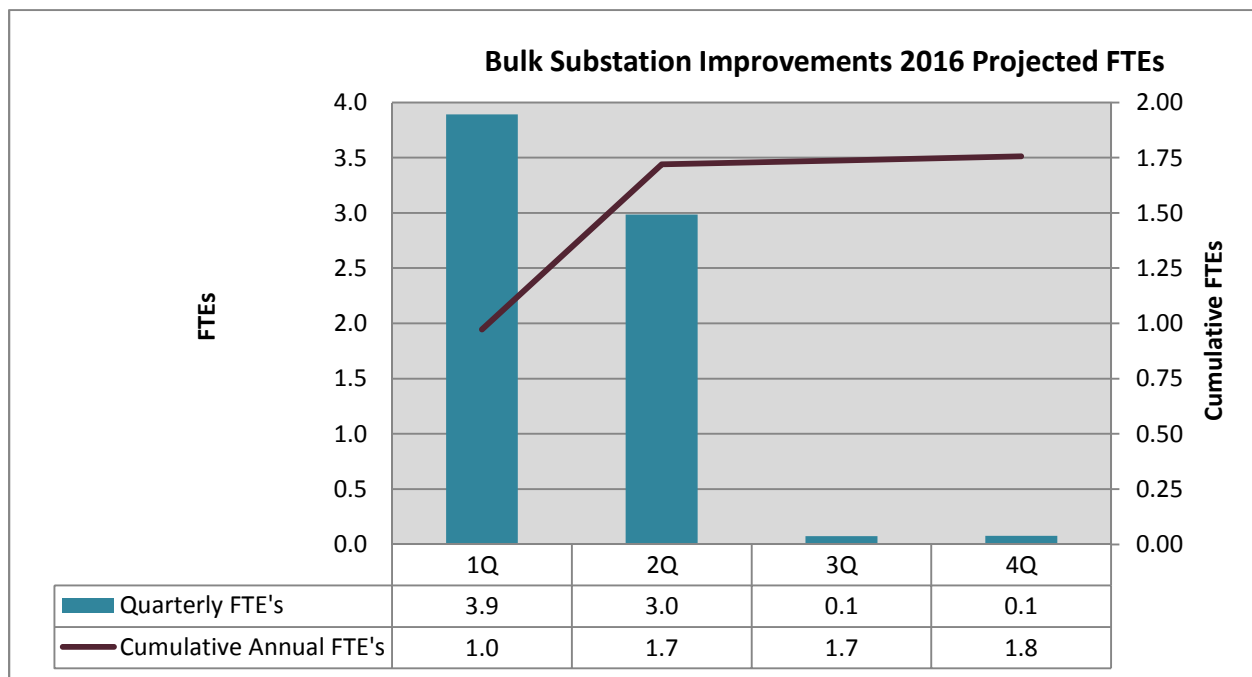
**Figure 1.C.2: Bulk Substation Improvements 2016 Capital Investment**



### 1.C.3: 2016 Program FTEs

Figure 1.C.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

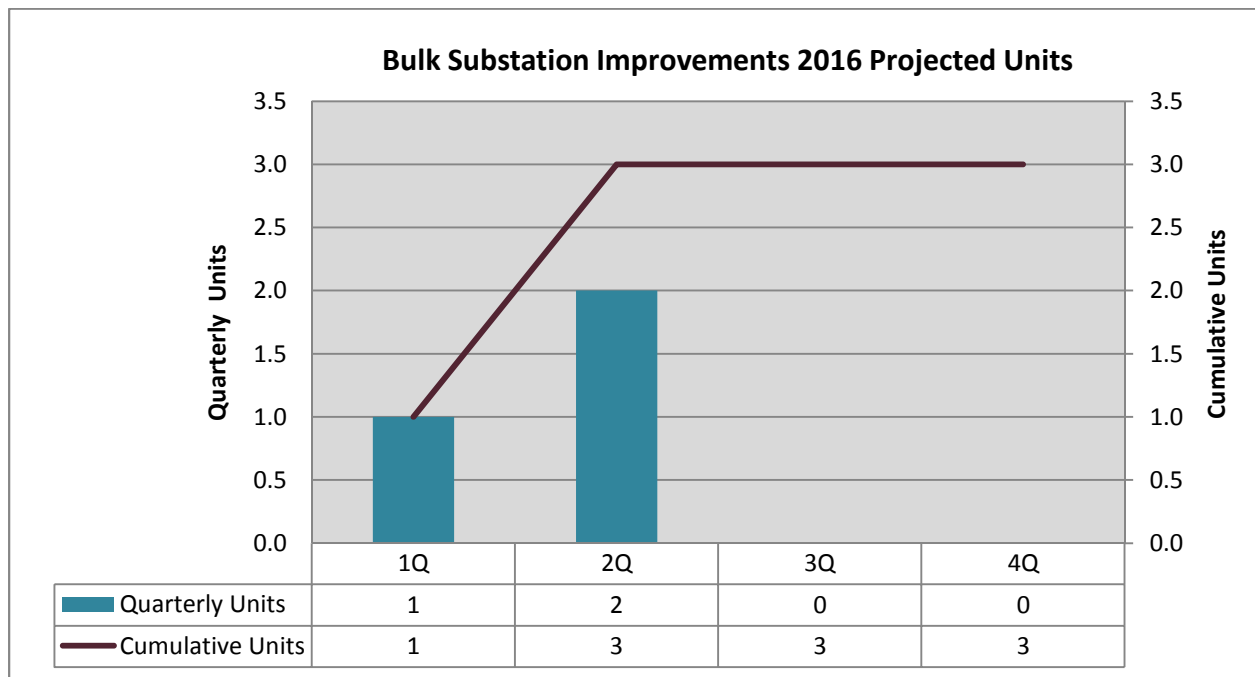
**Figure 1.C.3: Bulk Substation Improvements 2016 FTEs**



#### 1.C.4: Program Units/Schedule

Figure 1.C.4 shows the projected number of units projected to be installed under this program in 2016. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.C.4: Bulk Substation Improvements 2016 Projected Units**



## **Section 1.D: Distribution Transformer Reserve.**

### **1.D.1: 2016 Program Scope**

This program will add distribution substation transformer reserve to select substations by, but not limited to, a combination of the following.

1. Adding a second transformer
2. Upgrading transformers in multi-unit substations.
3. Re-enforcing existing distribution feeder ties.
4. Constructing new distribution feeder ties.

Expected benefits include, but are not limited to, reduced outages during a single transformer protection zone fault and increased operating flexibility to perform maintenance functions.

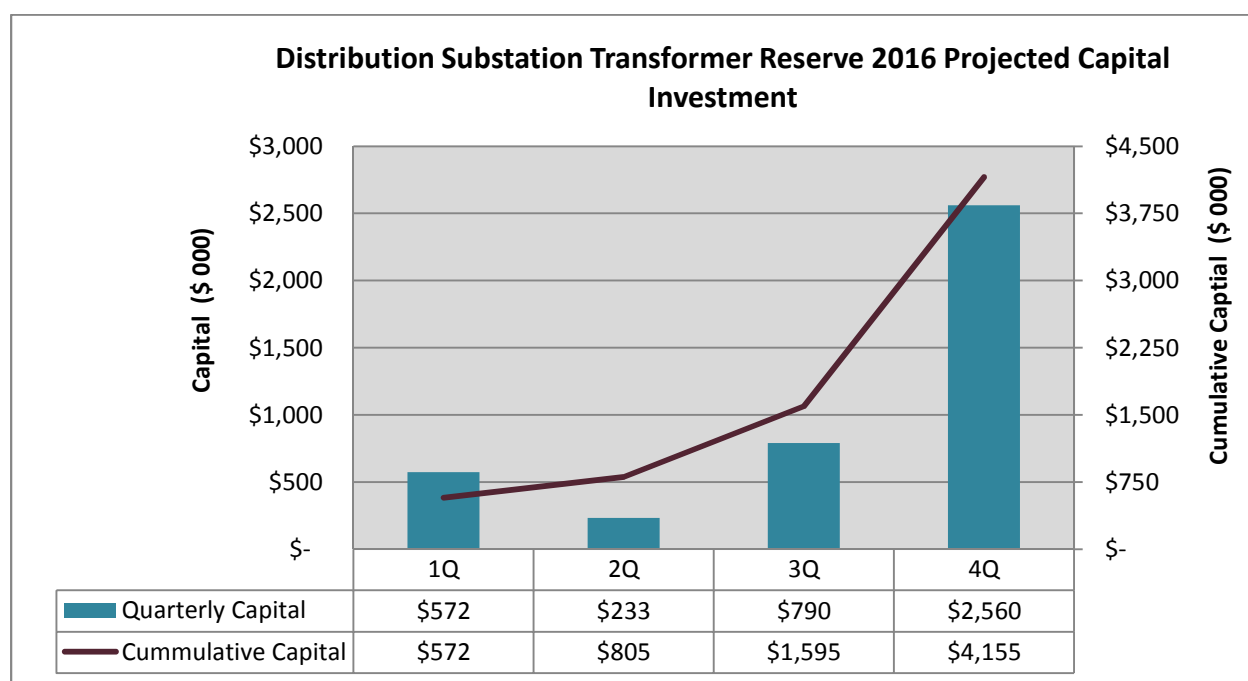
The stations will be generally selected based on the following criteria:

1. Load transfer capability.
2. Number of connected customers.

### 1.D.2: 2016 Program Capital Investments

Figure 1.D.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$4.2 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

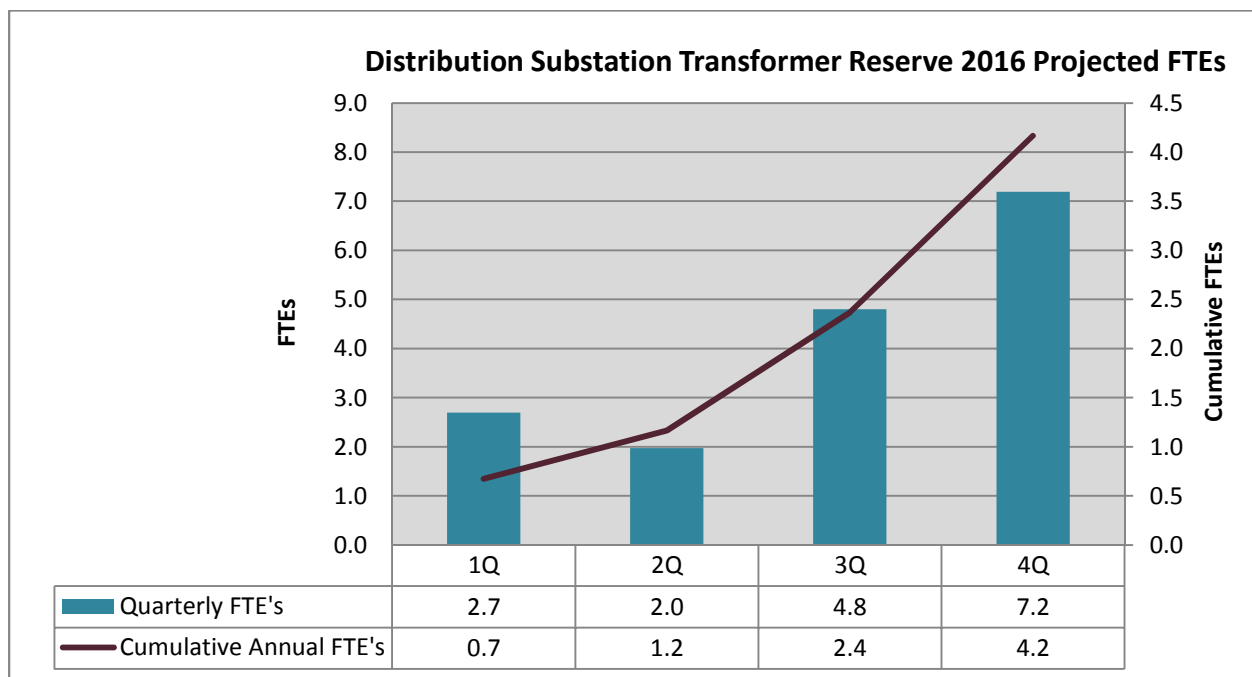
**Figure 1.D.2: Distribution Transformer Reserve 2016 Capital Investment**



### 1.D.3: 2016 Program FTEs

Figure 1.D.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

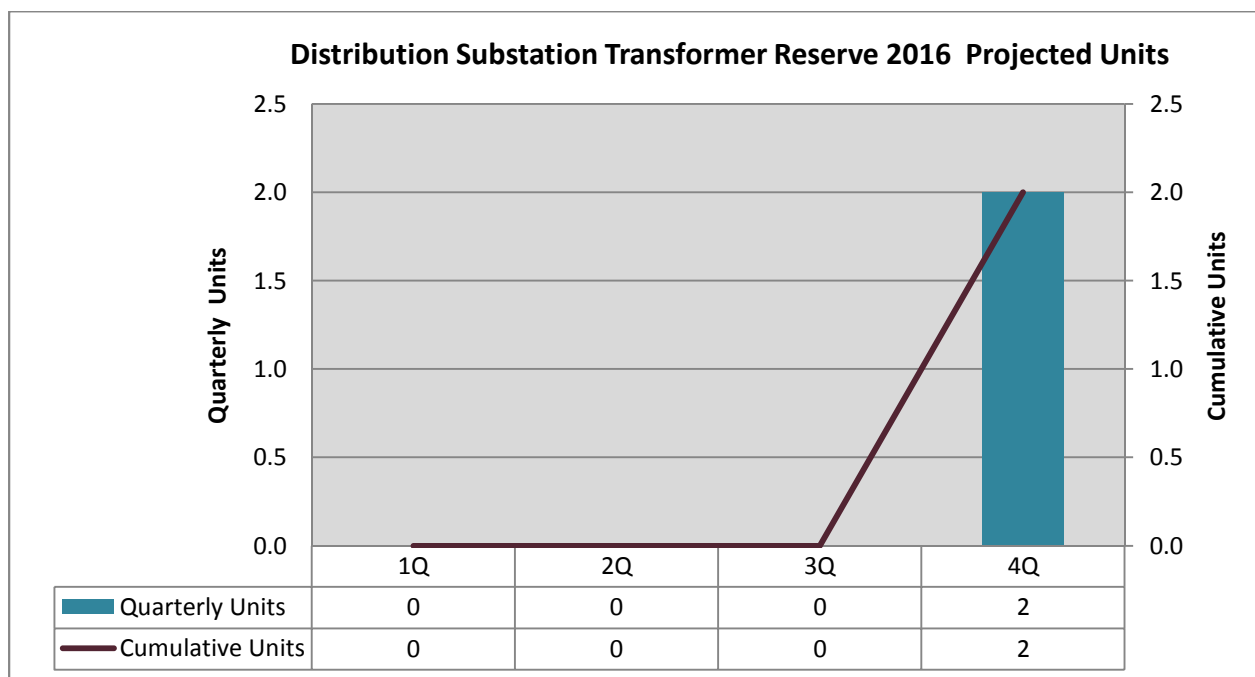
**Figure 1.D.3: Distribution Transformer Reserve 2016 FTEs**



#### 1.D.4: Program Units/Schedule

Figure 1.D.4 shows the projected number of projects to be placed in service in 2016 under this program. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.D.4: Distribution Transformer Reserve 2016 Units**



## **Section 1.E: Tie Line Capacity – Line 6973**

### **1.E.1: 2016 Program Scope**

The scope of this project is to provide a reserve supply for the load that is supplied by Line 6973. Currently this line exceeds the threshold design criteria of having a reserve supply for lines in excess of 40MVA. This project will also relieve loading on 34.5kV circuit L3390 and defer the installation of the Edwards 150MVA 138/69kV LTC autotransformer.

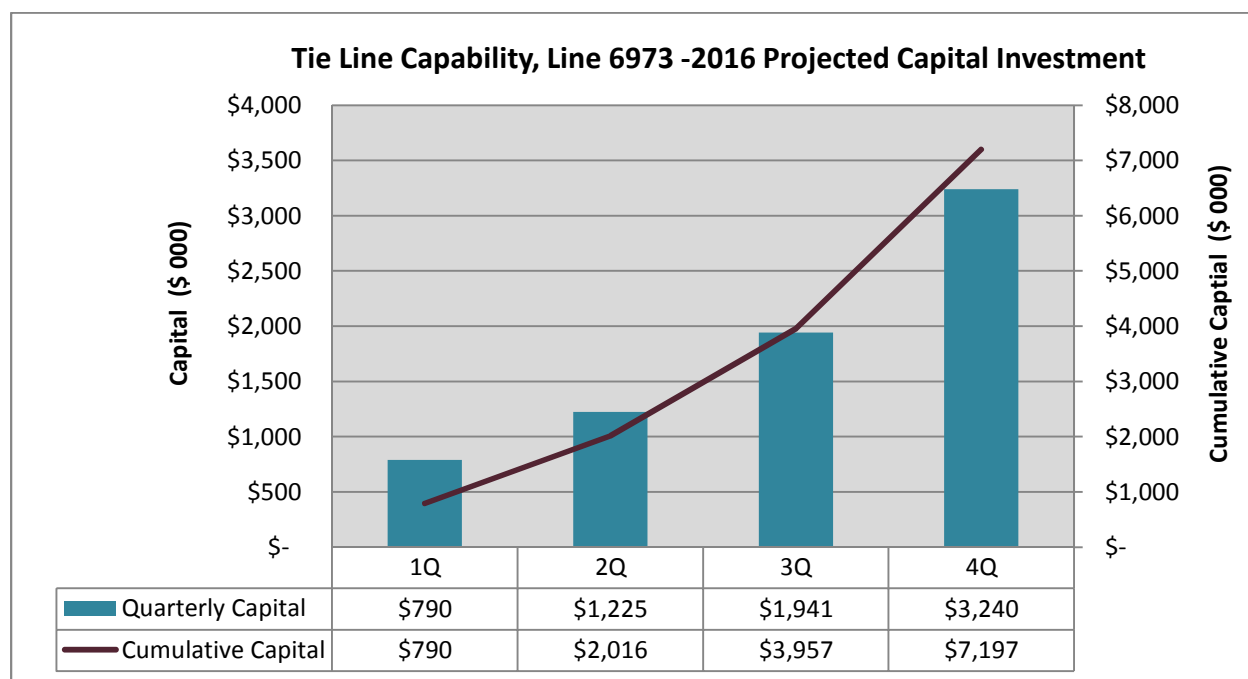
The major portions of this project are as follows:

1. Build a new substation (Huff) and install a 112MVA 138/69kV LTC Autotransformer.
2. Upgrade L6973 and connect to the 69KV mesh network.
3. 2000Amp 69KV bus for 3-69kV line positions, 1-69kV capacitor bank, 2-69kV line terminals.
4. The 138kV transmission connection that is required will be outside of this plan.

## 1.E.2: 2016 Program Capital Investments

Figure 1.E.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$7.2M in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

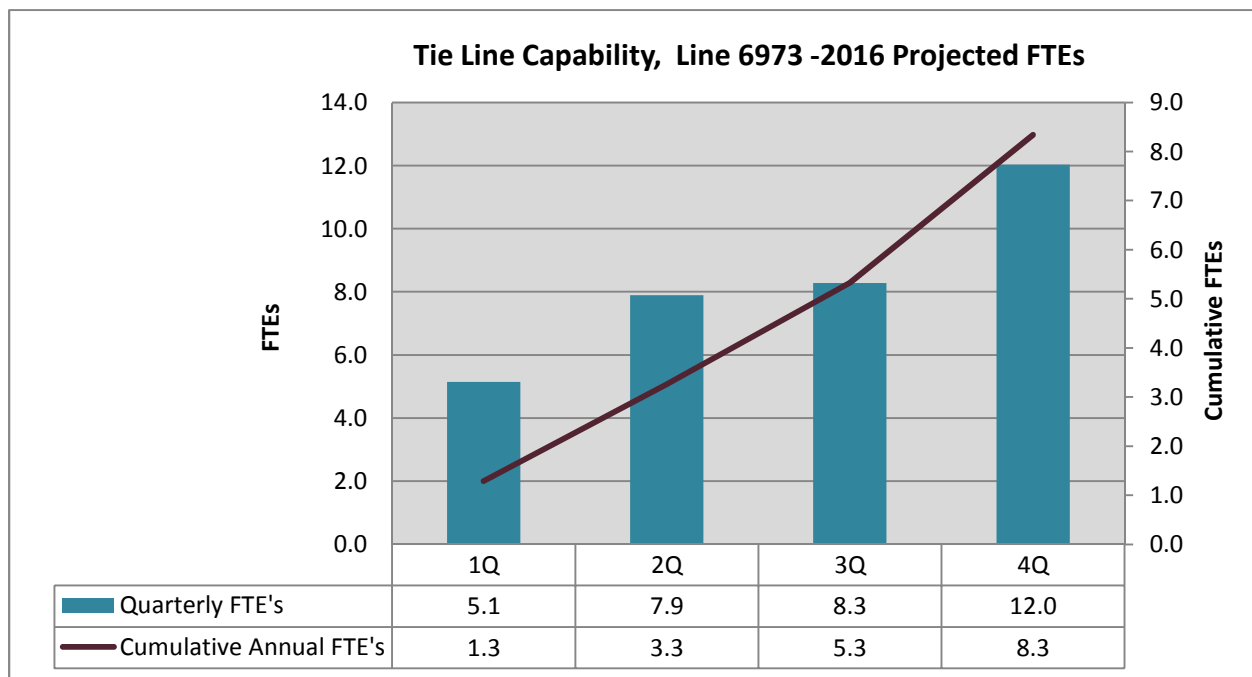
**Figure 1.E.2: Tie Line Capacity – Line 6973 2016 Capital Investment**



### 1.E.3: 2016 Program FTEs

Figure 1.E.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 1.E.3: Tie Line Capacity – Line 6973 2016 FTEs**



### 1.E.4: Program Units/Schedule

This program currently consists of one project. The project began engineering in 2015 with construction starting in 2016. Completion of the project is anticipated to be in 2017.

## **Section 1.F.: Substation Low Side Auto Transfer**

### **1.F.1: 2016 Program Scope**

This program will add low side 12kV tie breakers to allow automatic low side transfer in some larger distribution substations with two or more transformers. AIC has over 150 substations 34 or 69kV high side, > 10.0 MVA with more than one transformer. A large percentage of these stations have no automatic transfer to the alternate transformer and/or bus in the event of a transformer protection zone fault.

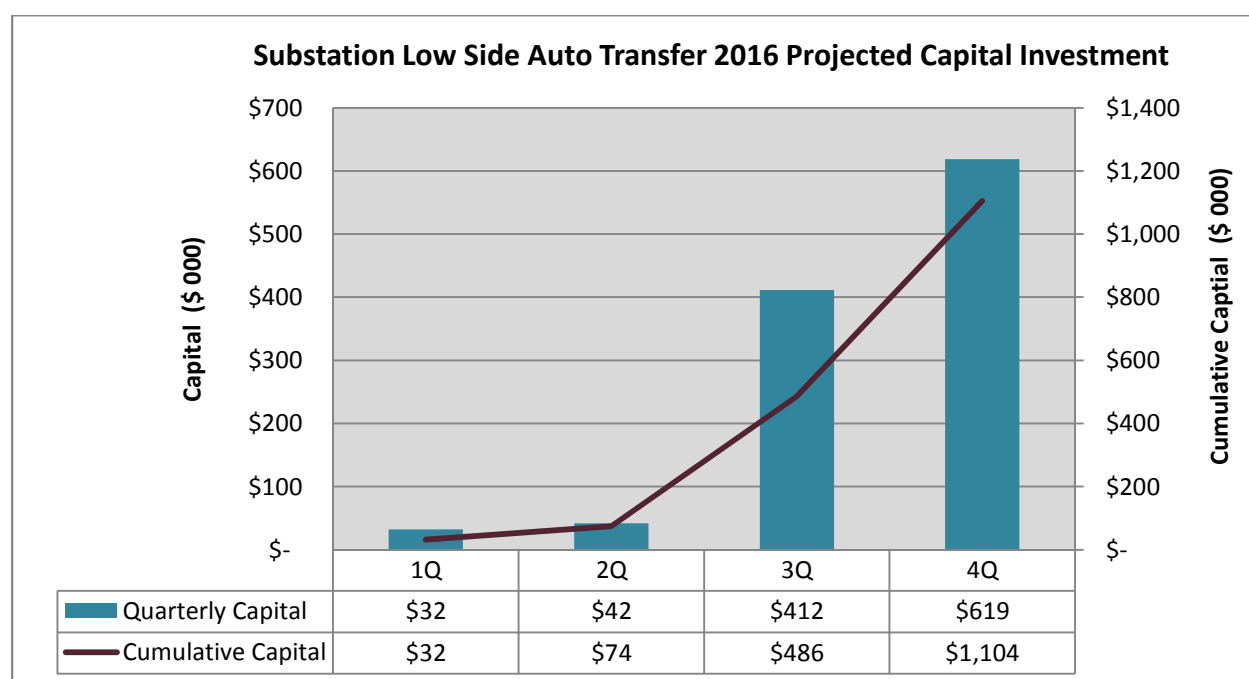
This program will evaluate the most heavily loaded stations by:

1. Customer count.
2. Site feasibility.

## 1.F.2: 2016 Program Capital Investments

Figure 1.F.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.1 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

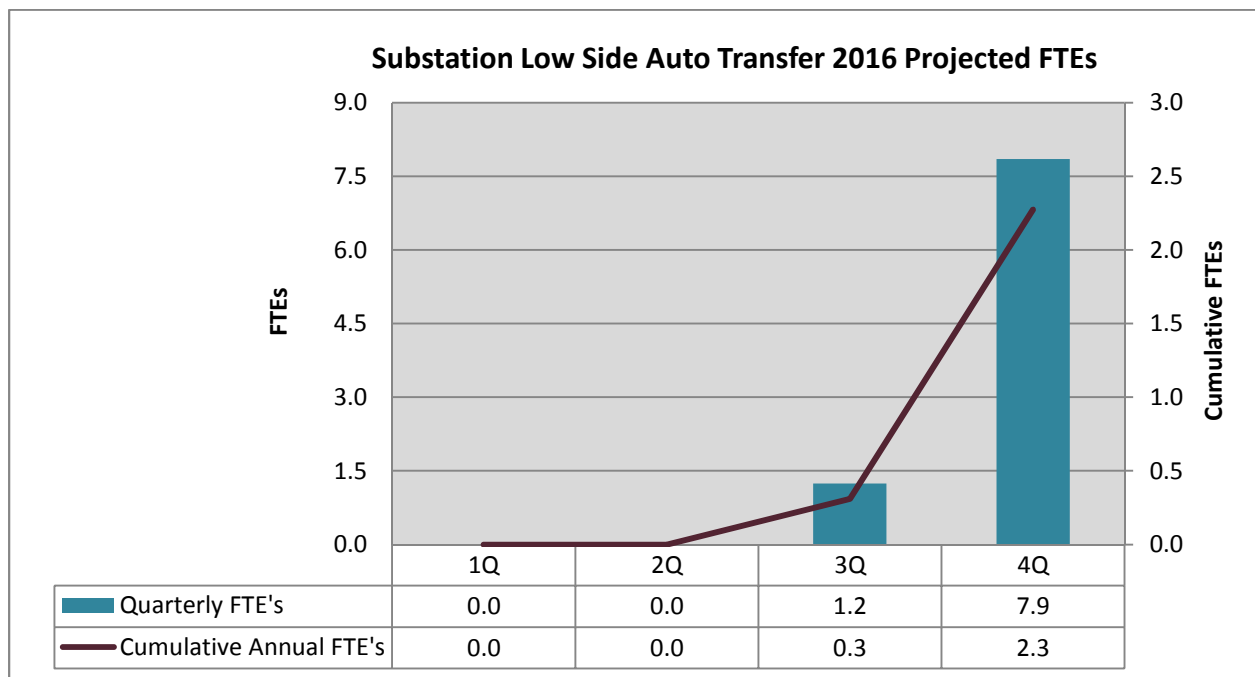
**Figure 1.F.2: Substation Low Side Auto Transfer 2016 Capital Investment**



### 1.F.3: 2016 Program FTEs

Figure 1.F.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

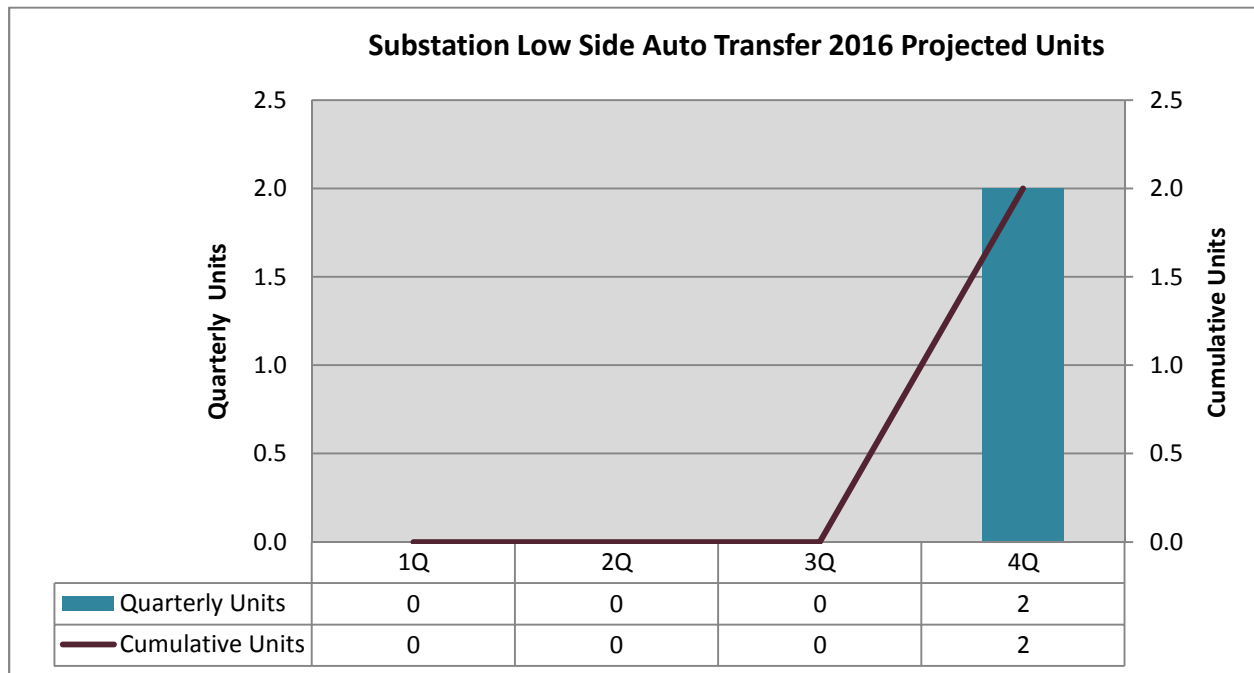
**Figure 1.F.3: Substation Low Side Auto Transfer 2016 FTEs**



#### 1.F.4: Program Units/Schedule

Figure 1.F.4 shows the projected number of projects to be placed in service in 2016 under this program. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.F.4: Substation Low Side Auto Transfer 2016 Units**



## **Section 1.G: High Voltage Distribution Pole Reinforcement**

### **1.G.1: 2016 Program Scope**

The intent of this program is to provide for the replacement of select wood poles with high strength poles, installation of additional high strength poles, or reinforcement of select wood poles on high voltage distribution lines. Hardening these select high voltage distribution lines will limit the likelihood of cascading failures due to extreme transverse loading.

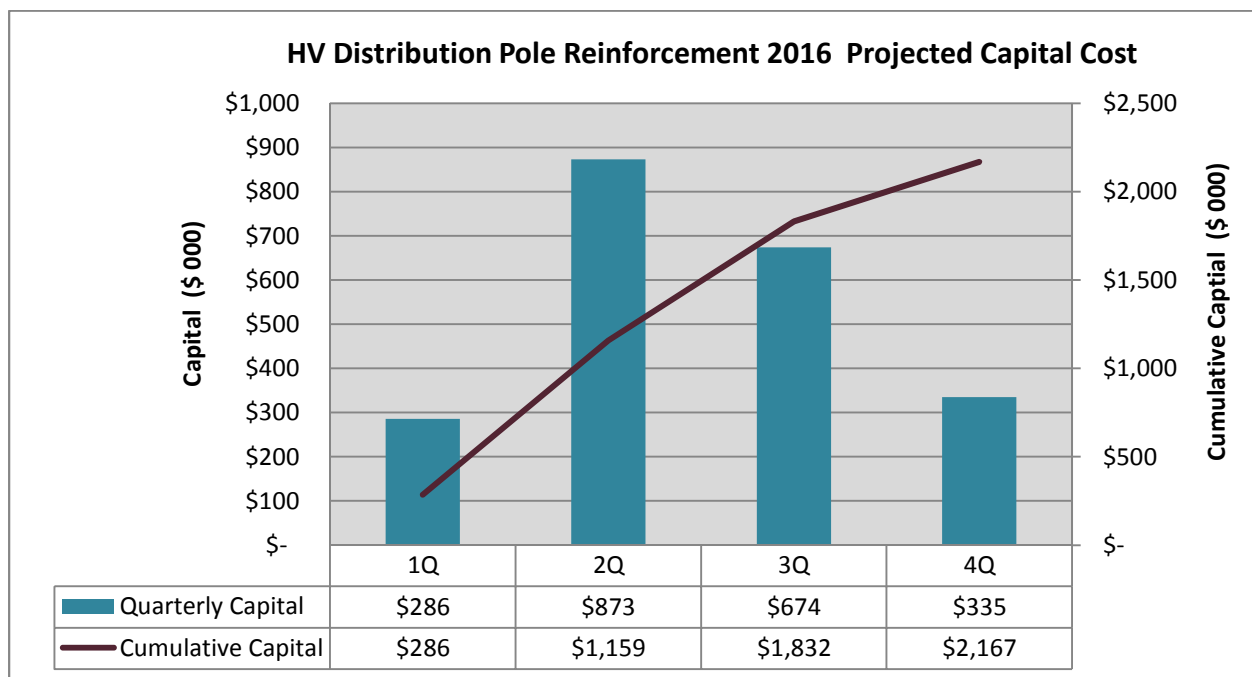
The lines will be generally selected based on:

1. Historical outage information
2. Greatest number of customers
3. Age and ground line condition of the pole
4. Proximity to guyed or protected structures
5. Workload management.

## 1.G.2: 2016 Program Capital Investments

Figure 1.G.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$2.2 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

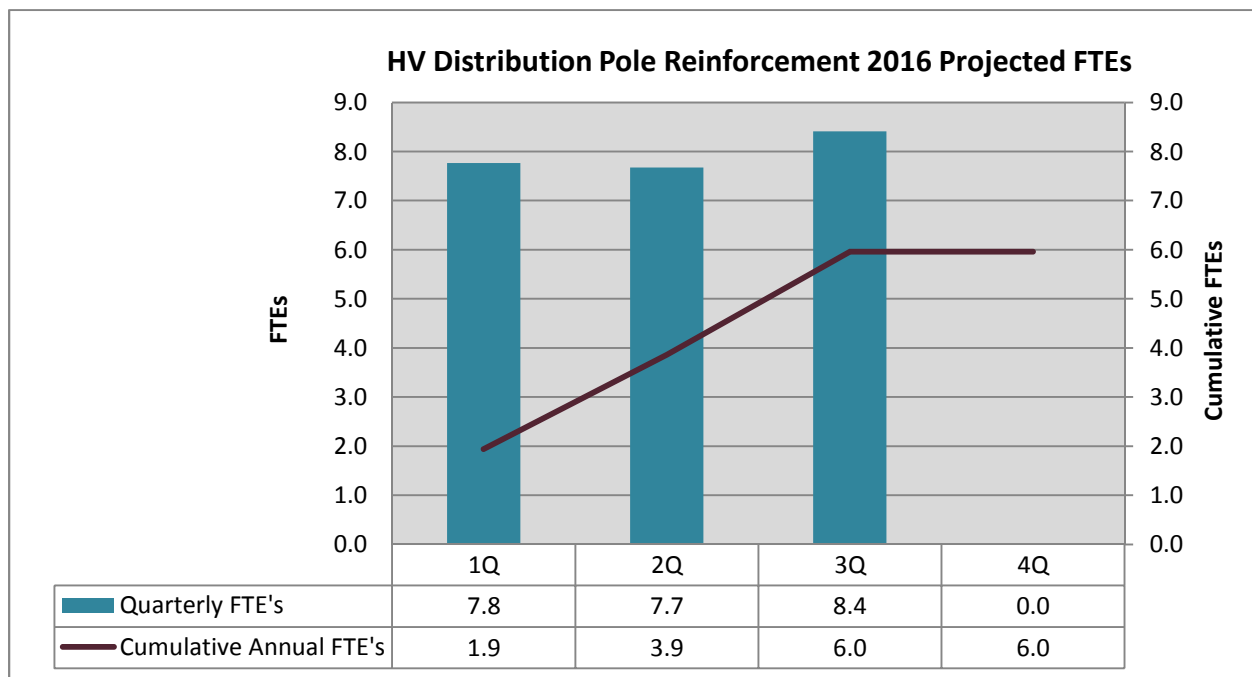
**Figure 1.G.2: HV Pole Reinforcement Program 2016 Capital Investment**



### 1.G.3: 2016 Program FTEs

Figure 1.G.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

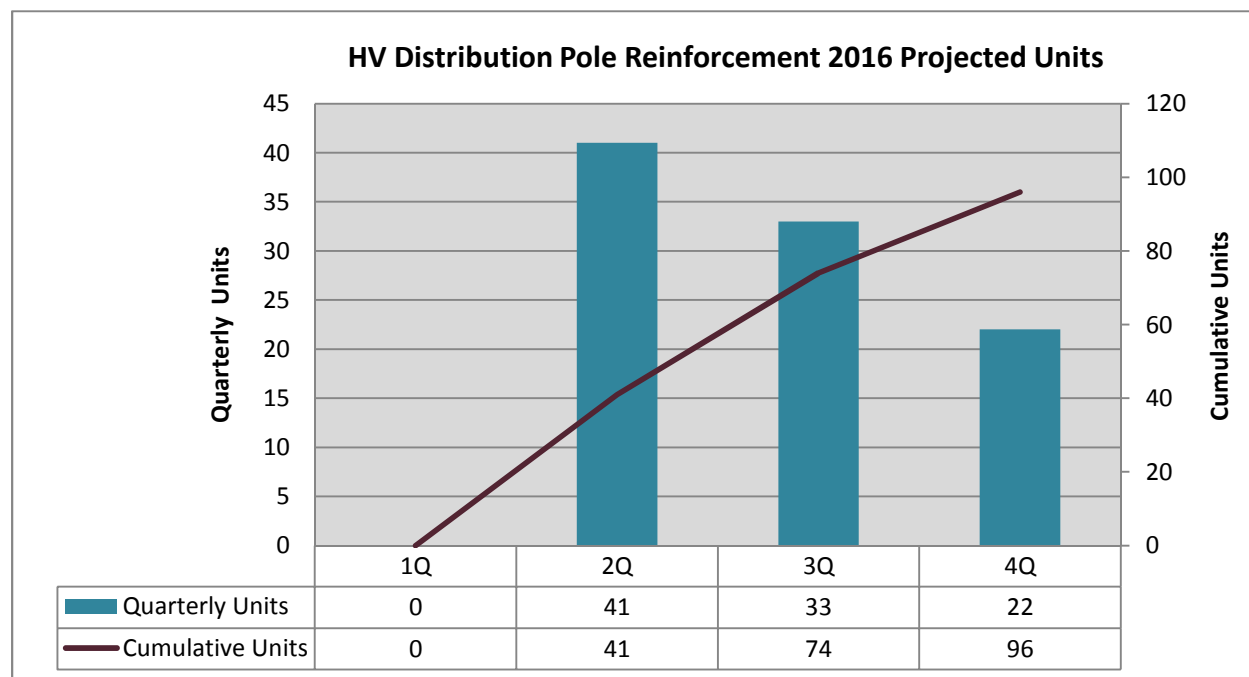
**Figure 1.G.3: HV Distribution Pole Reinforcement Projected 2016 FTEs**



#### 1.G.4: Program Units/Schedule

Figure 1.G.4 shows the projected number of poles to be replaced, installed or reinforced in 2016 under this program. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.G.4: HV Pole Reinforcement Program 2016 Units**



## **Section 1.H: Replace High Voltage Distribution Breakers**

### **1.H.1: 2016 Program Scope**

This program provides for the replacement of aging 34kV or 69kV breakers. AIC has over one thousand 34kV and 69kV breakers, and over 400 are greater than 40 years old. Many of them have problematic mechanisms that are beyond a reasonable maintenance strategy.

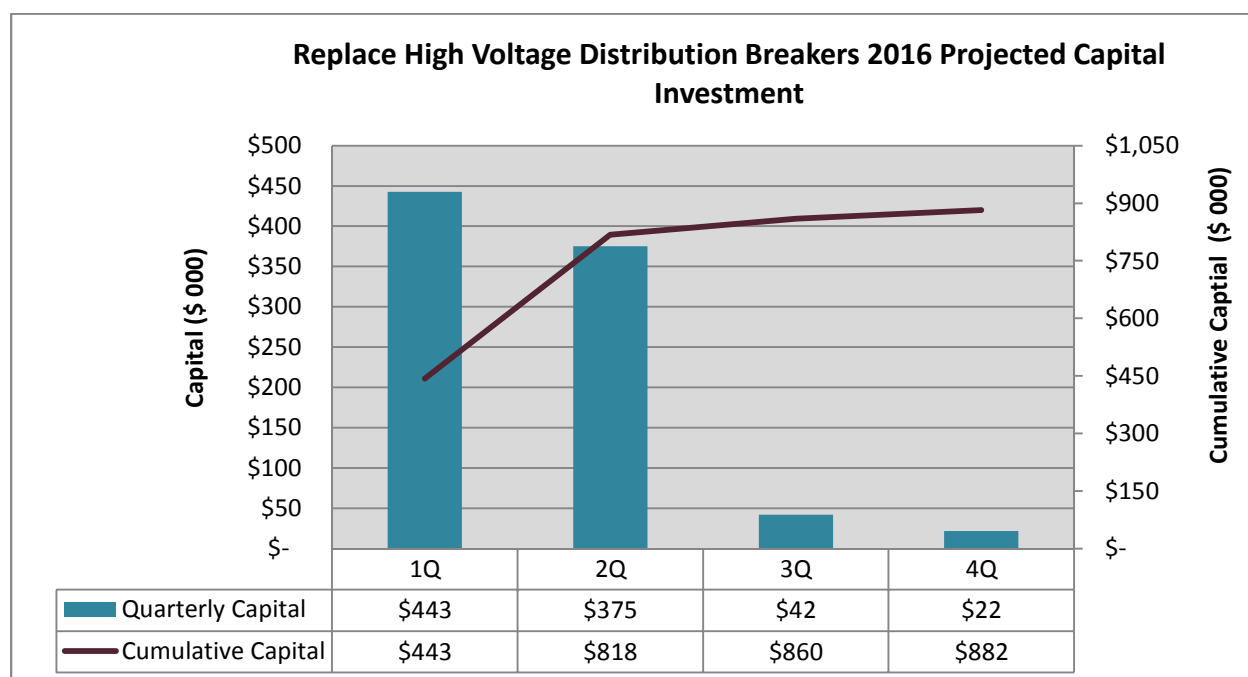
The breakers will be generally selected on the basis of:

1. Customer counts.
2. Maintenance history.
3. Criticality of load.
4. Workload management

## 1.H.2: 2016 Program Capital Investments

Figure 1.H.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$0.9 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

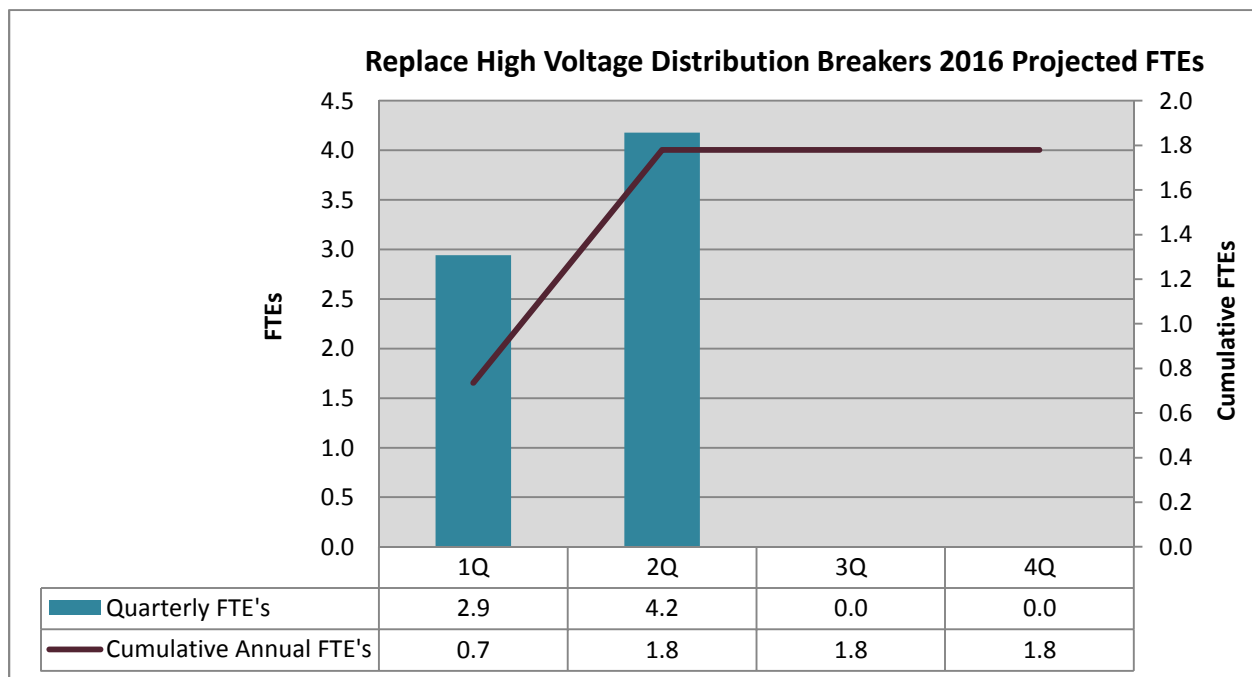
**Figure 1.H.2: Replace HV Distribution Breakers Program 2016 Capital Investment**



### 1.H.3: 2016 Program FTEs

Figure 1.H.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

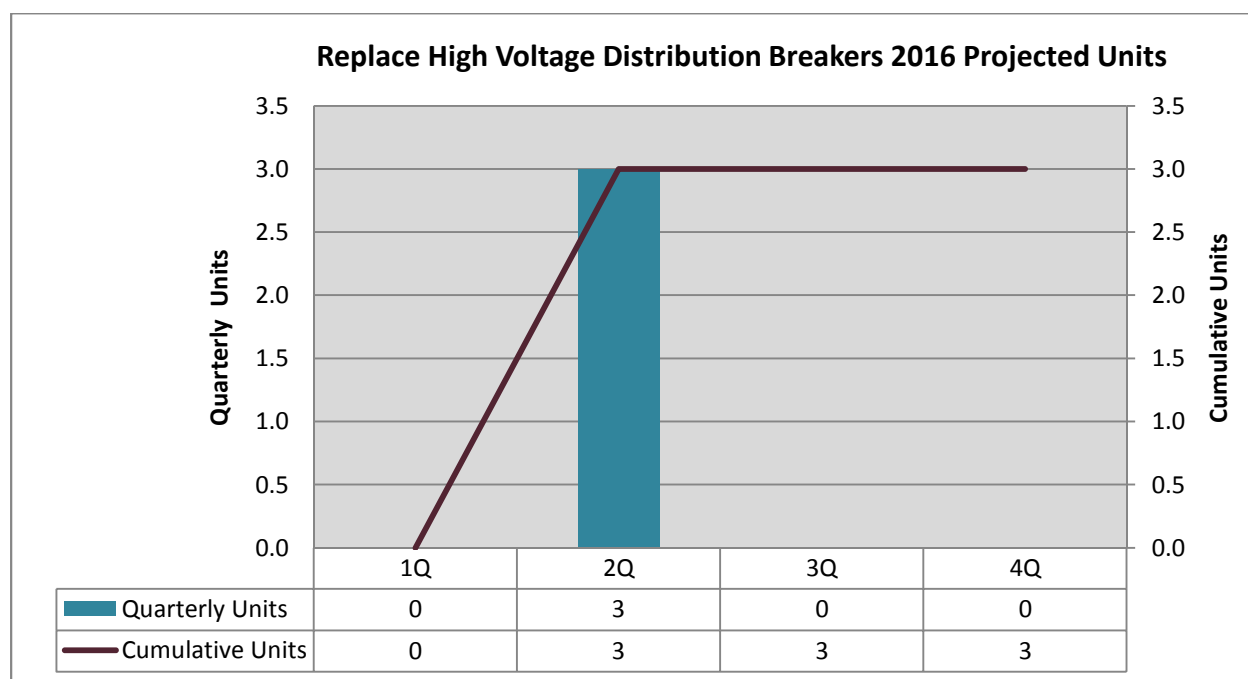
**Figure 1.H.3: Replace HV Distribution Breakers Program 2016 FTEs**



#### 1.H.4: Program Units/Schedule

Figure 1.H.4 shows the projected number of units to be replaced, installed or reinforced in 2016 under this program. This chart will serve as a tracking mechanism over the course of 2016, and reflects the scope of work planned to be accomplished, as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

**Figure 1.H.4: Replace High Voltage Breakers 2016 Units**



## **Section 1.I: Spacer Cable Program**

### **1.I.1: 2016 Program Scope**

This program is designed to improve the performance of spacer cable systems and the reliability of the circuits involved. In cases where the insulation has severely deteriorated, this involves replacement of the existing spacer cable. Depending upon the specific application, a new spacer cable system may be installed, new open wire conductors, or underground cable may be installed.

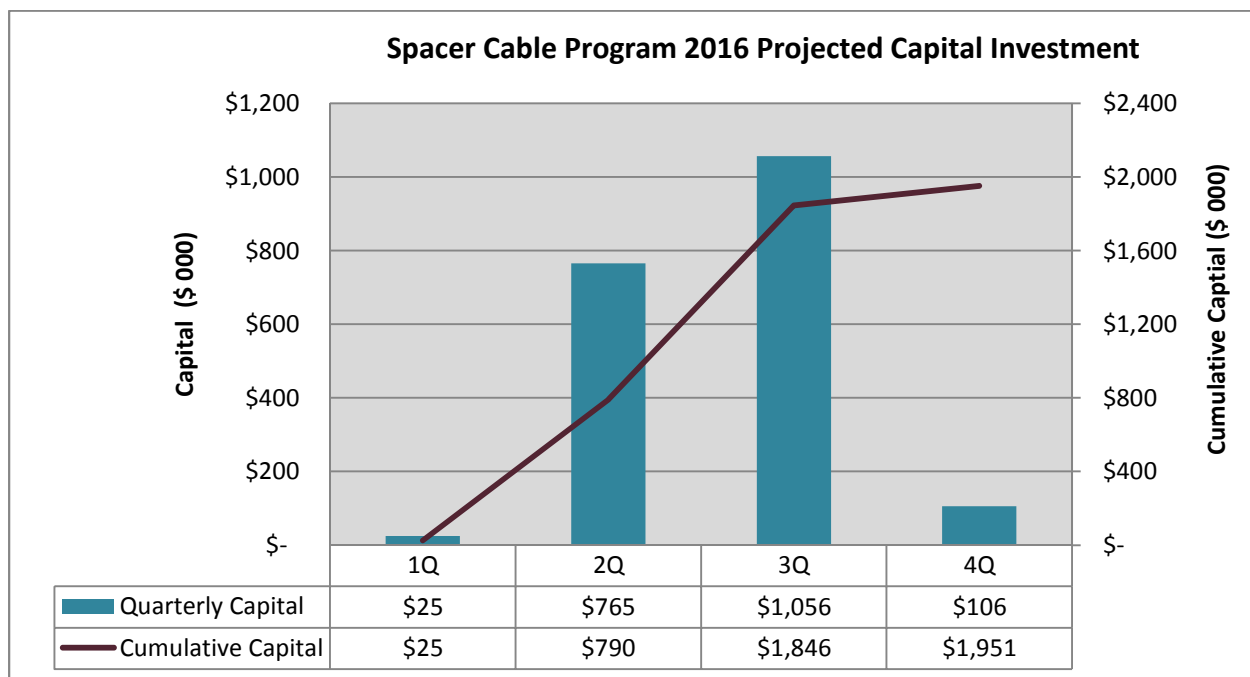
The spacer cable projects were generally selected on the basis of:

1. Inspection results
2. Greatest number of customers
3. Engineering availability
4. Workload management

### 1.I.2: 2016 Program Capital Investments

Figure 1.I.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$2.0 million in capital investment, plus associated expenses. Estimates of cost, units of work and schedules for that work may evolve over time.

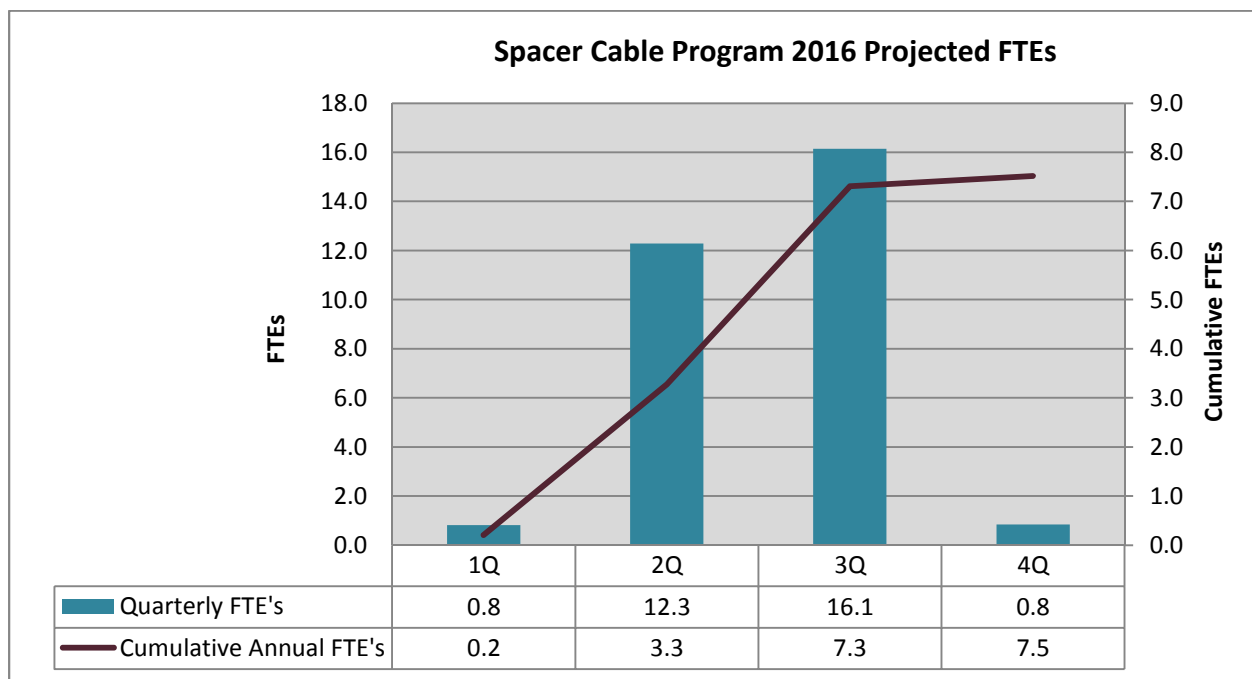
**Figure 1.I.2: Spacer Cable Program 2016 Capital Investments**



### 1.I.3: 2016 Program FTEs

Figure 1.I.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

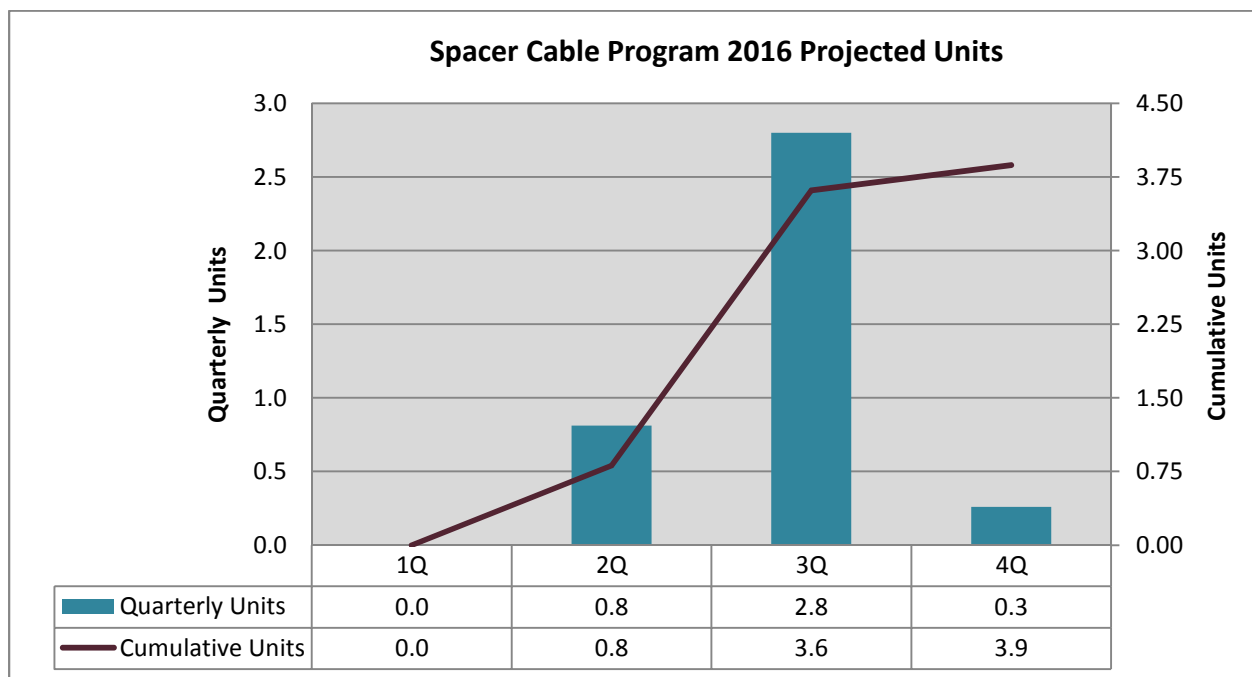
**Figure 1.I.3: Spacer Cable Program 2016 FTEs**



#### 1.I.4: Program Units/Schedule

Figure 1.I.4 represents the projected units to be completed for this program in 2016. Engineering will also commence for future projects in 2016. The units for the Spacer Cable Program are miles.

**Figure 1.I.4: Spacer Cable Program 2016 Units**



## **Section 1.J: Rebuild Primary Distribution Lines**

### **1.J.1: 2016 Program Scope**

This program is designed to rebuild select distribution circuits. These projects could include reconductoring, replacing poles, increasing the operating voltage or total rebuilds.

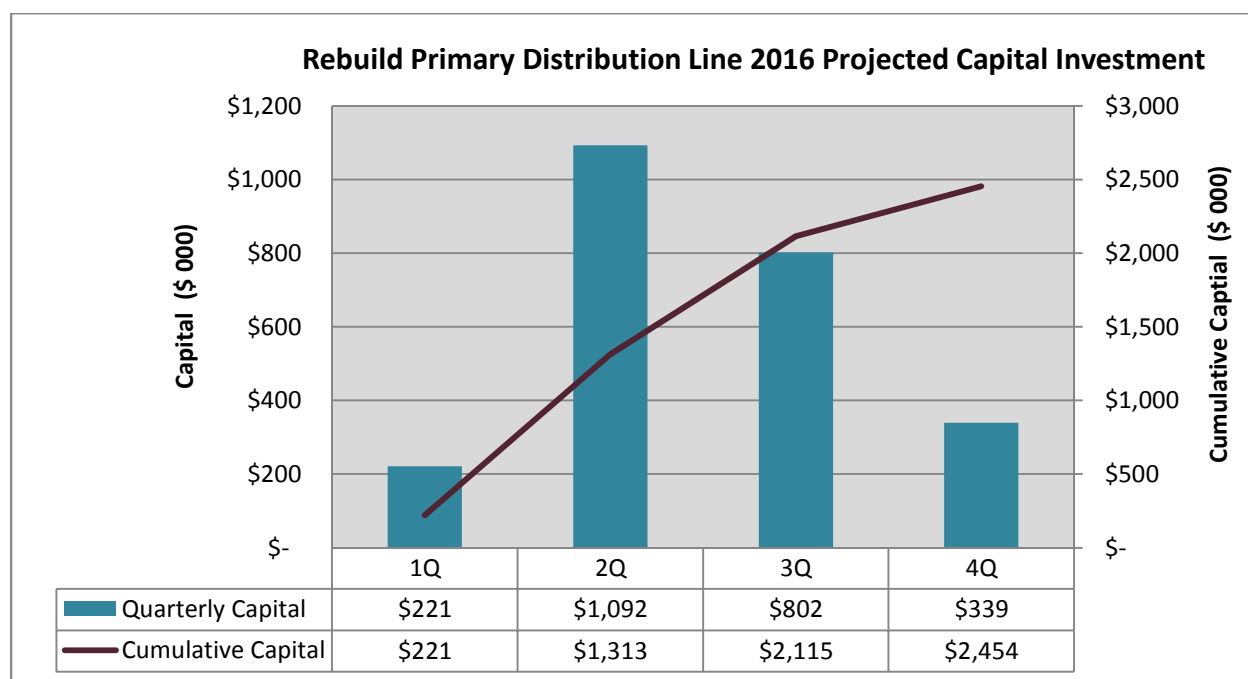
These projects were generally selected on the basis of:

1. Line Condition
2. Greatest number of customers
3. Outage history
4. Workload management
5. System improvement possibilities

### 1.J.2: 2016 Program Capital Investments

Figure 1.J.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$2.5 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

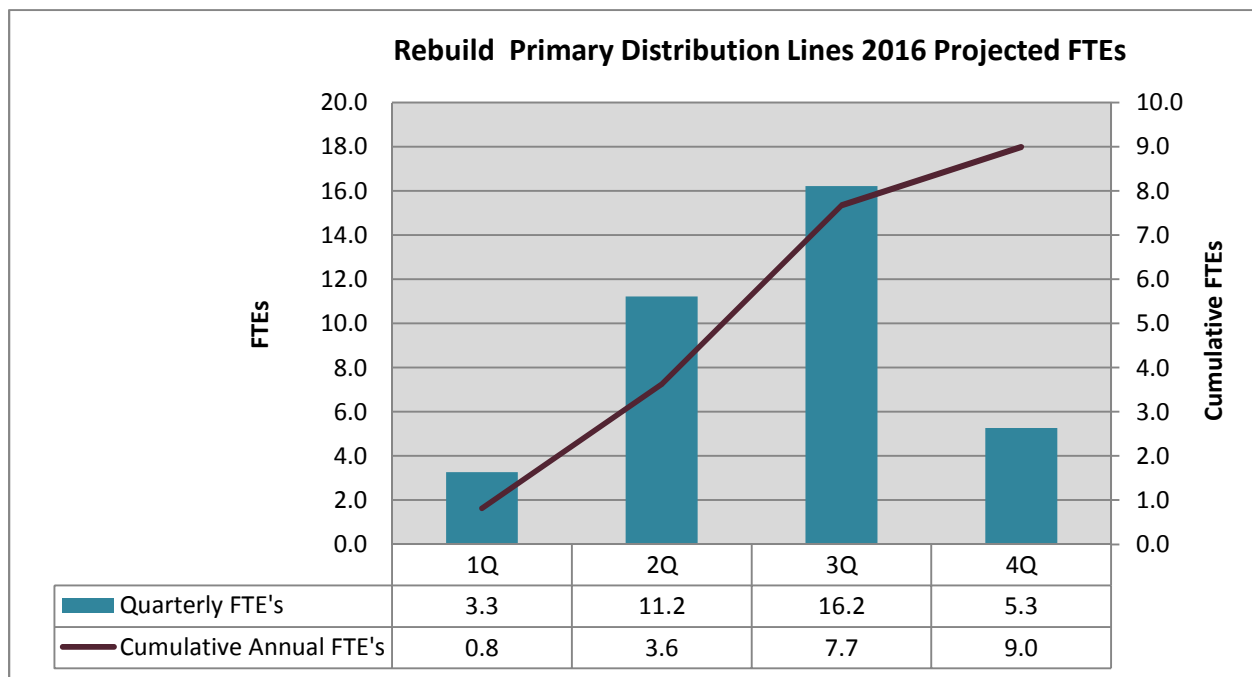
**Figure 1.J.2: Rebuild Primary Distribution Lines 2016 Capital Investments**



### 1.J.3: 2016 Program FTEs

Figure 1.J.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

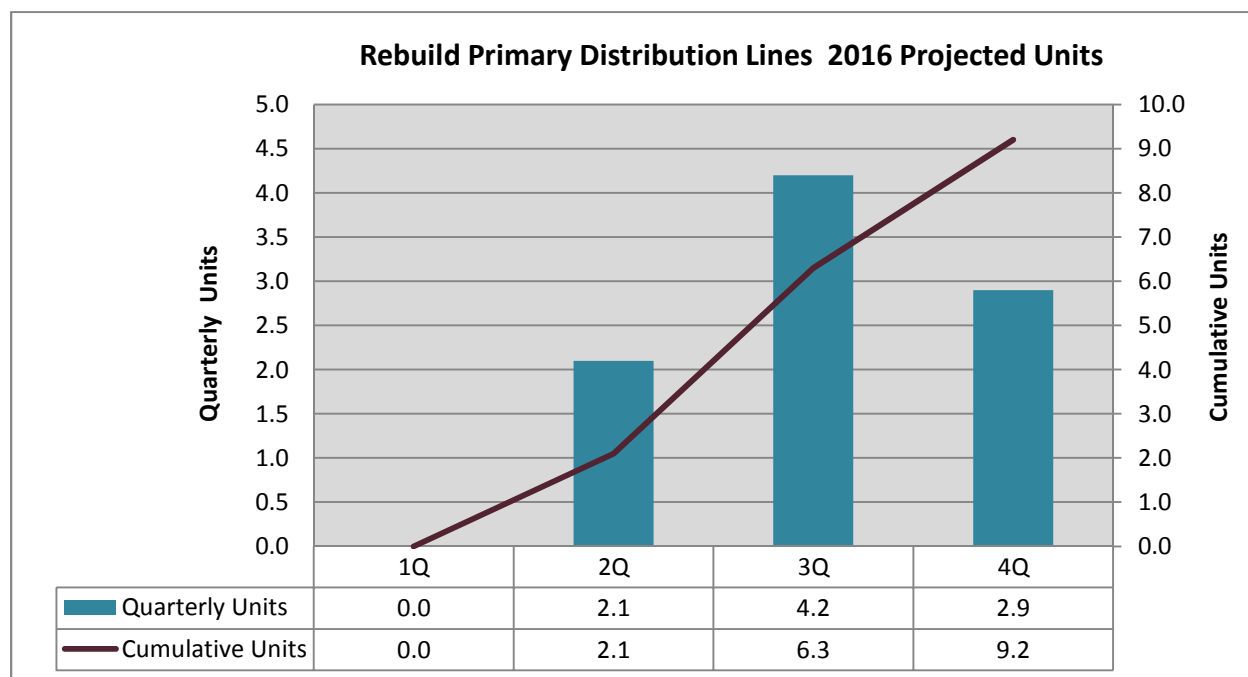
**Figure 1.J.3: Rebuild Primary Distribution Lines 2016 FTEs**



#### 1.J.4: Program Schedule/Units

Figure 1.J.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are miles.

**Figure 1.J.4: Rebuild Primary Distribution Lines 2016 Units**



## **Section 1.K: Primary Distribution Lines Capacity Additions**

### **1.K.1: 2016 Program Scope**

This program is designed to upgrade or modify existing distribution circuits to provide additional capacity. The additional capacity may be required due to such items as existing or anticipated load, load transfer capability, or voltage conversions.

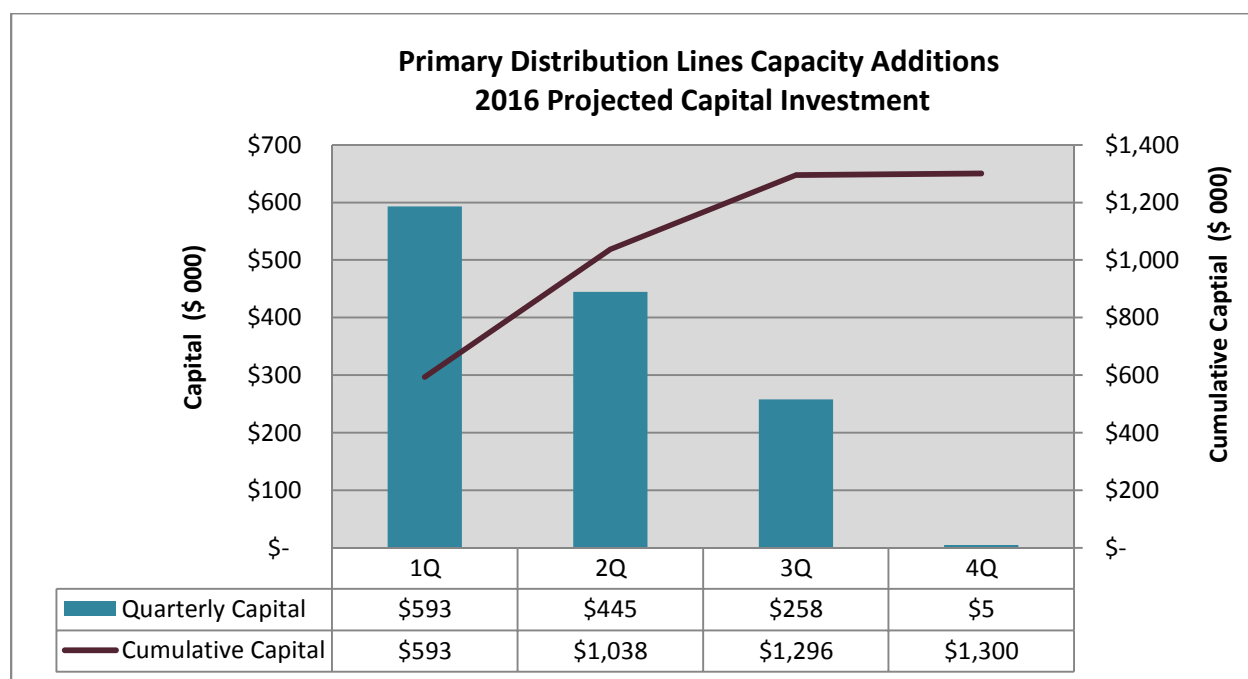
These projects were generally selected on the basis of:

1. Thermal load considerations
2. Load transfer capabilities
3. Projected load growth
4. Reliability history
5. Workload management

## 1.K.2: 2016 Program Capital Investments

Figure 1.K.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.3 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

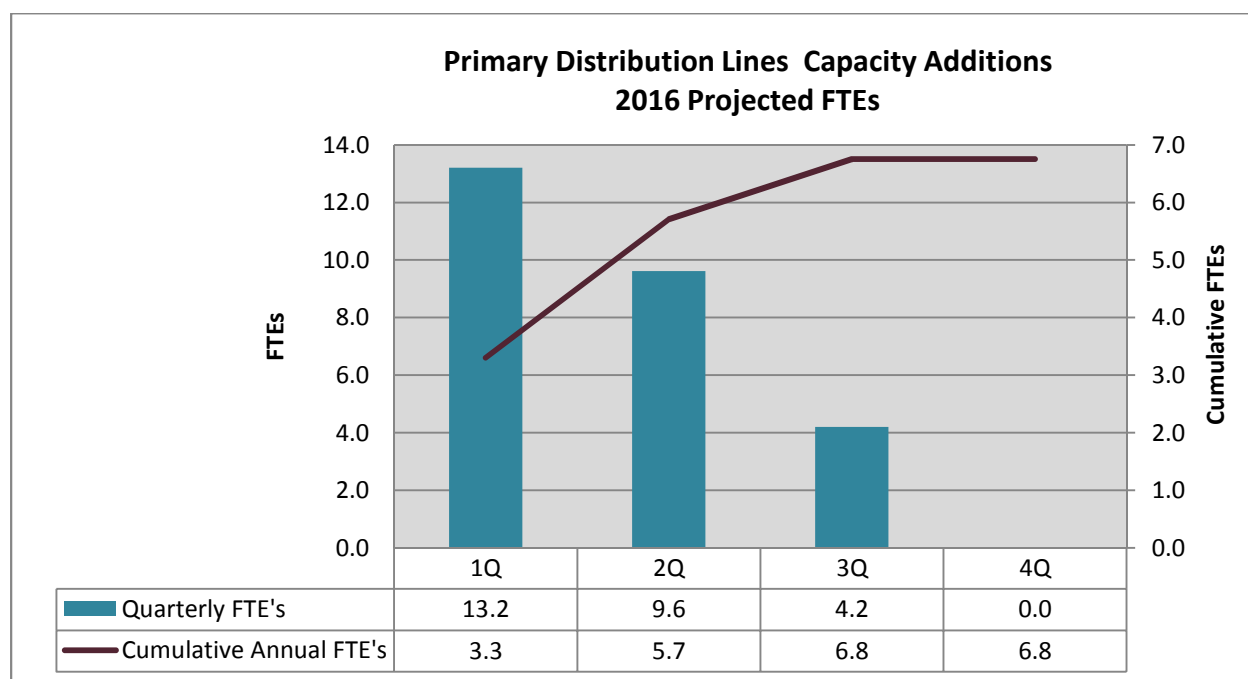
**Figure 1.K.2: Primary Distribution Line Capacity Additions 2016 Capital Investments**



### 1.K.3: 2016 Program FTEs

Figure 1.K.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

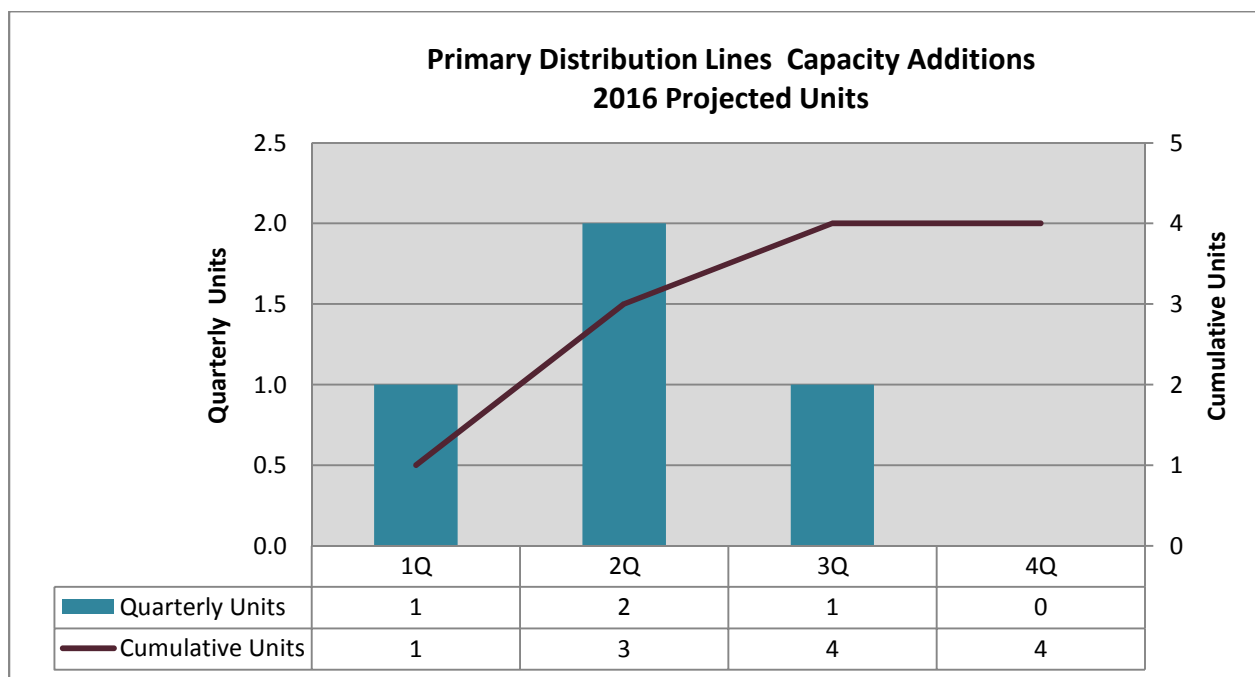
**Figure 1.K.3: Primary Distribution Lines Capacity Additions Projected 2016 FTEs**



#### 1.K.4: Program Schedule/Units

Figure 1.K.4 shows the number of distribution line capacity additions to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are projects.

**Figure 1.K.4: Primary Distribution Lines Capacity Additions 2016 Units**



## **Section 1.L: Bulk Transformer Outage Mitigation**

### **1.L.1: 2016 Program Scope**

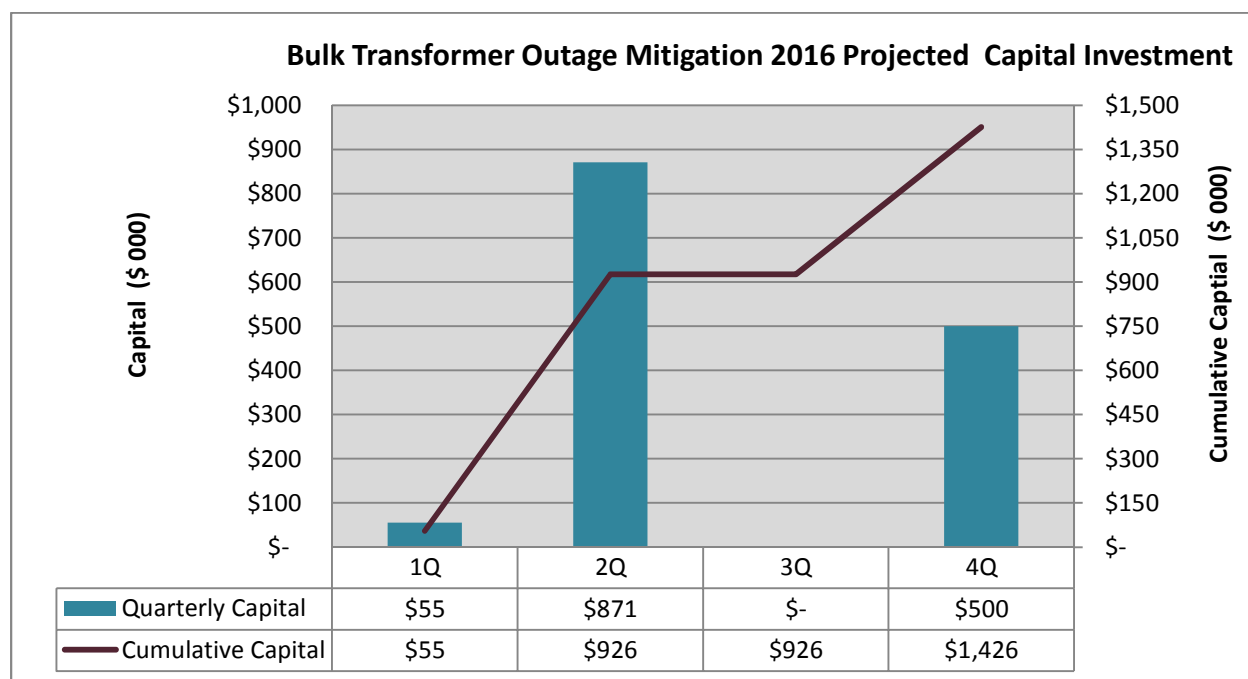
This program is to provide system reinforcements by installing a second bulk supply transformer, building a new bulk supply substation, or reconductoring high voltage distribution lines to provide the system redundancy required to facilitate system maintenance and avoid load curtailments during a bulk substation transformer outage.

Evaluation of potential projects includes the analyses of the robustness of the system during off peak season when a planned outage of a bulk supply transformer might occur for maintenance purposes. The criteria specifies that for the planned outage of a bulk supply transformer and the loss of a single high voltage distribution line, transmission line or generating unit while supplying 65% of projected peak system load, the system shall operate with all equipment at or below emergency thermal limits and within voltage limits.

## 1.L.2: 2016 Program Capital Investments

Figure 1.L.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.4 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

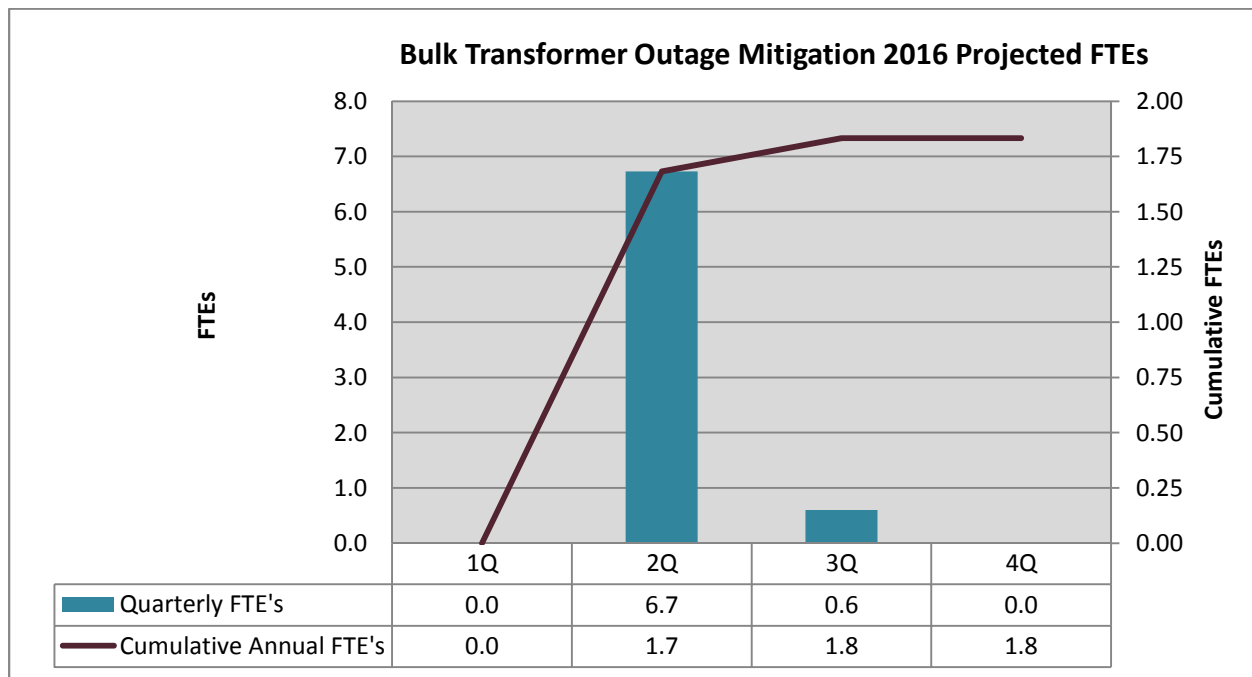
**Figure 1.L.2: Bulk Transformer Outage Mitigation 2016 Capital Investments**



### 1.L.3: 2016 Program FTEs

Figure 1.L.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

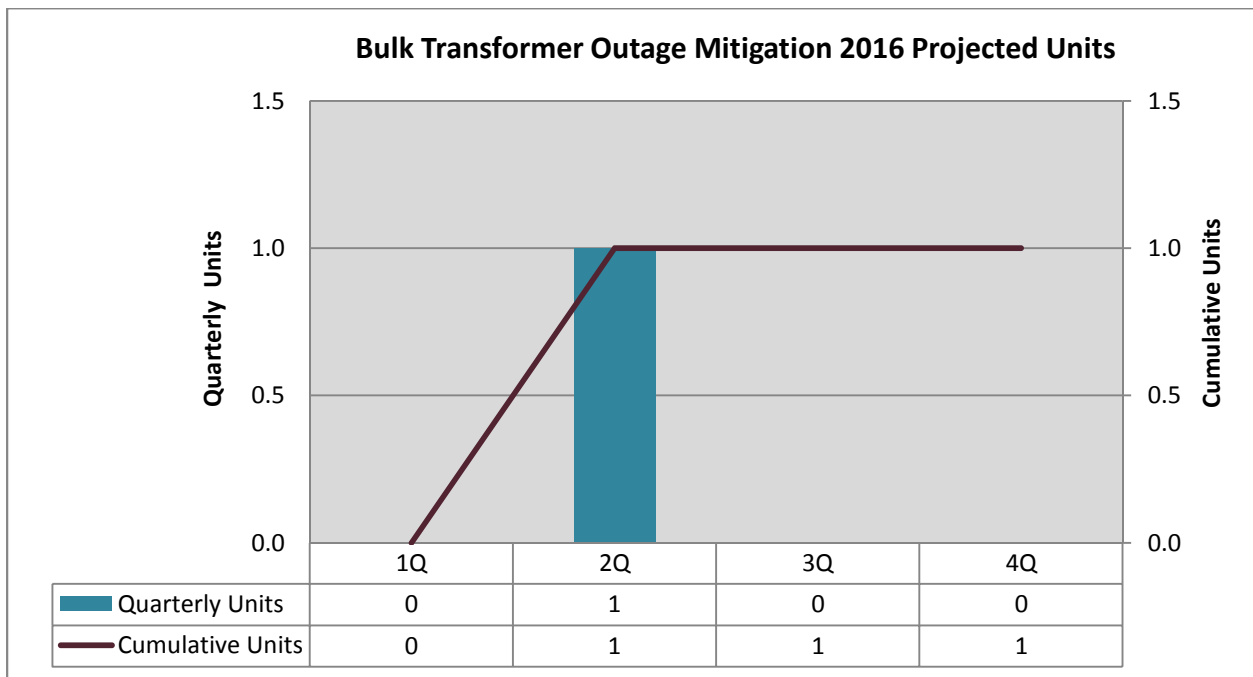
**Figure 1.L.3: Bulk Transformer Outage Mitigation 2016 FTEs**



#### 1.L.4: Program Schedule/Units

Figure 1.L.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are projects.

**Figure 1.K.4: Bulk Transformer Outage Mitigation 2016 Units**



## **Section 1.M: Rebuild High Voltage Distribution Lines**

### **1.M.1: 2016 Program Scope**

This program is designed to rebuild and/or reconductor existing high voltage distribution circuits that are in poor condition, require additional capacity, require additional lighting protection, or need additional system ties.

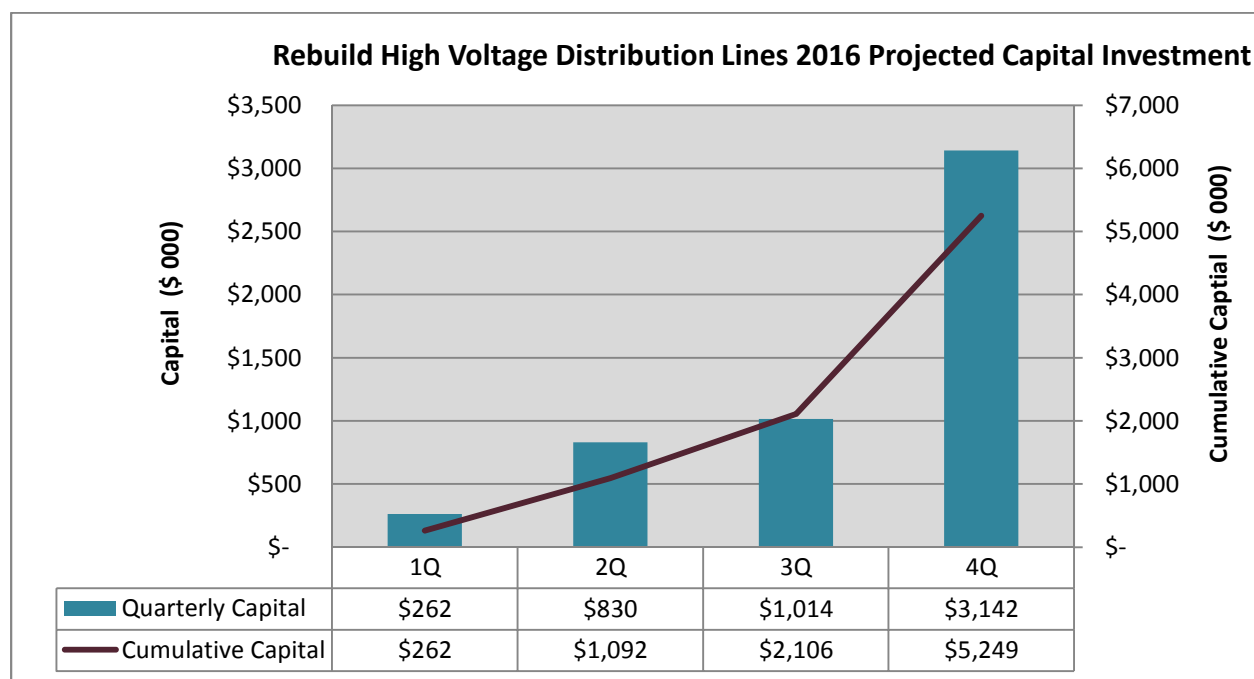
These projects were generally selected on the basis of:

1. Greatest number of customers
2. Outage history
3. Condition of the facilities
4. System operating parameters
5. Workload management

## 1.M.2: 2016 Program Capital Investments

Figure 1.M.2 represents the projected capital expenditures this program in 2016. AIC estimates the 2016 program cost to be approximately \$5.2 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work, may evolve over time.

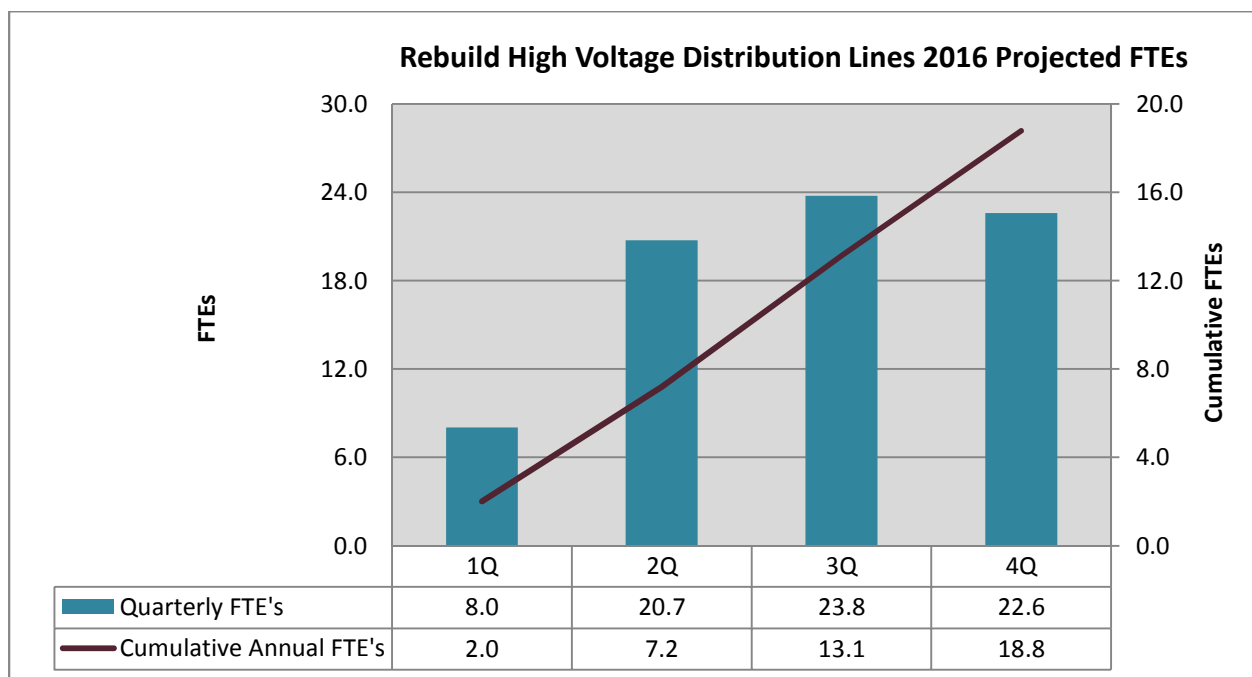
**Figure 1.M.2: Rebuild High Voltage Distribution Lines 2016 Capital Investments**



### 1.M.3: 2016 Program FTEs

Figure 1.M.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

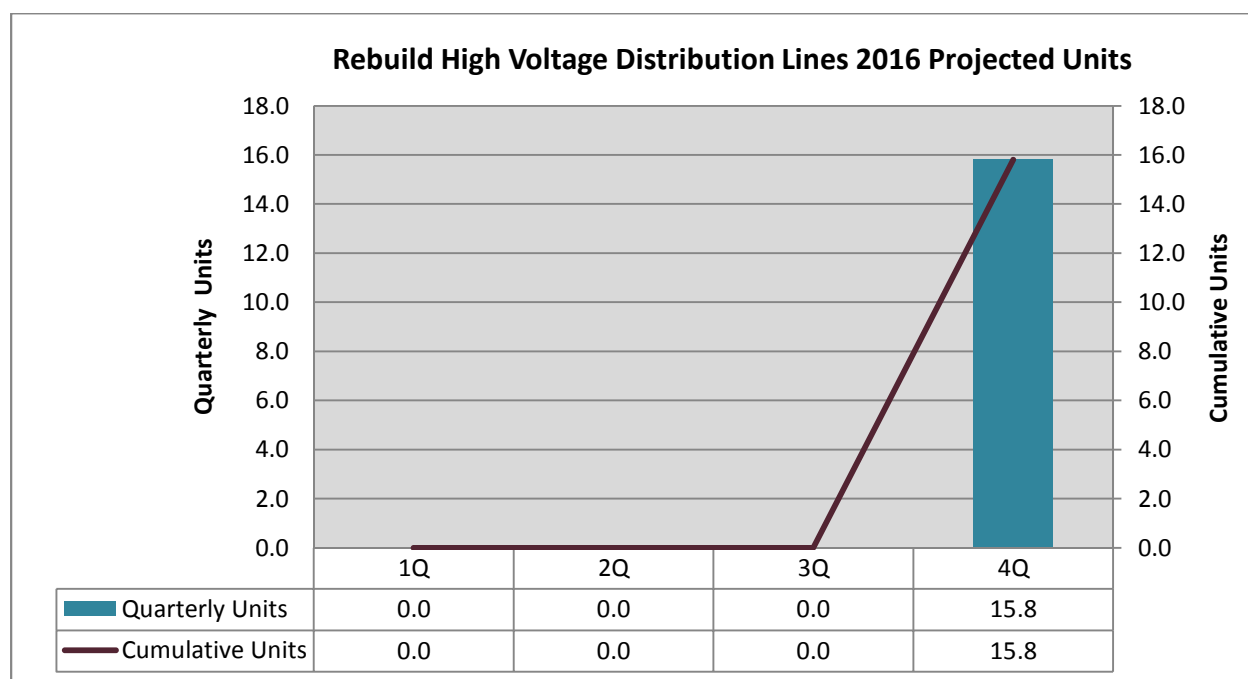
**Figure 1.M.3: Rebuild High Voltage Distribution Lines 2016 FTEs**



#### 1.M.4: Program Schedule/Units

Figure 1.M.4 shows the units to be completed under this program in 2016. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are miles.

**Figure 1.M.4: Rebuild High Voltage Distribution Lines 2016 Units**



## Section 1.N: Expand Bulk Supply Substations

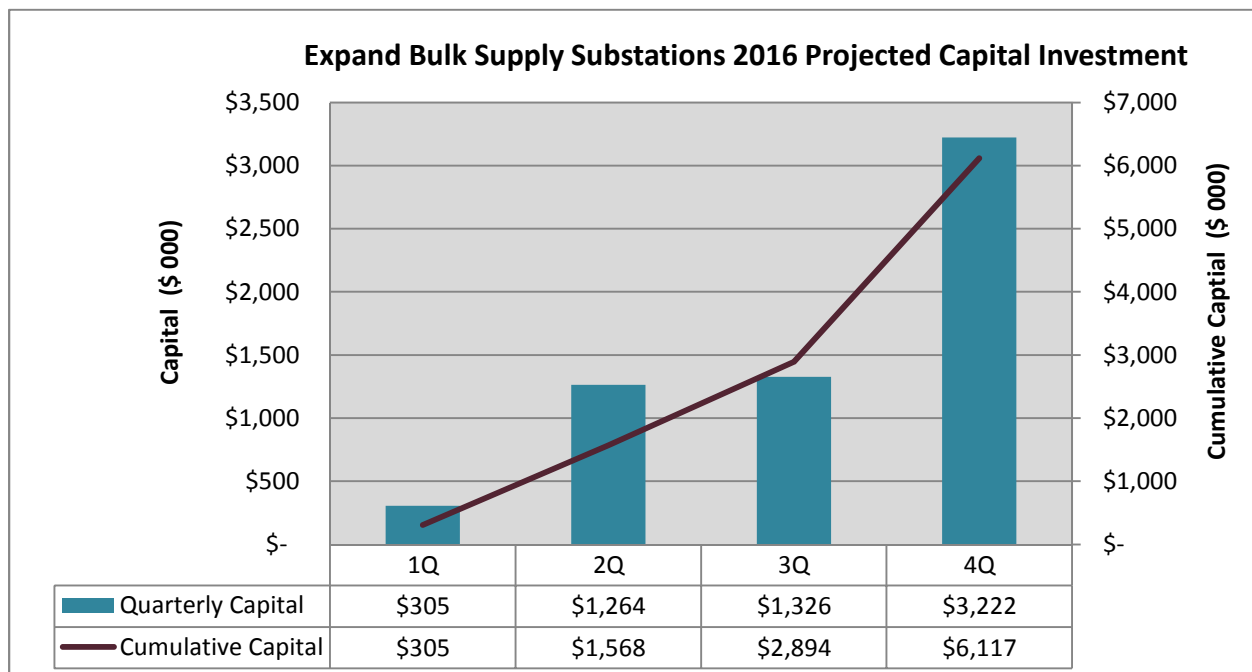
### 1.N.1: 2016 Program Scope

This program will construct new bulk supply substations (e.g., 161/69 kV, 138/69 kV, and 138/34.5 kV), or install new bulk supply transformers at existing substation locations, and implement associated line and equipment reinforcements.

### 1.N.2: 2016 Program Capital Investments

Figure 1.N.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$6.1 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work, may evolve over time.

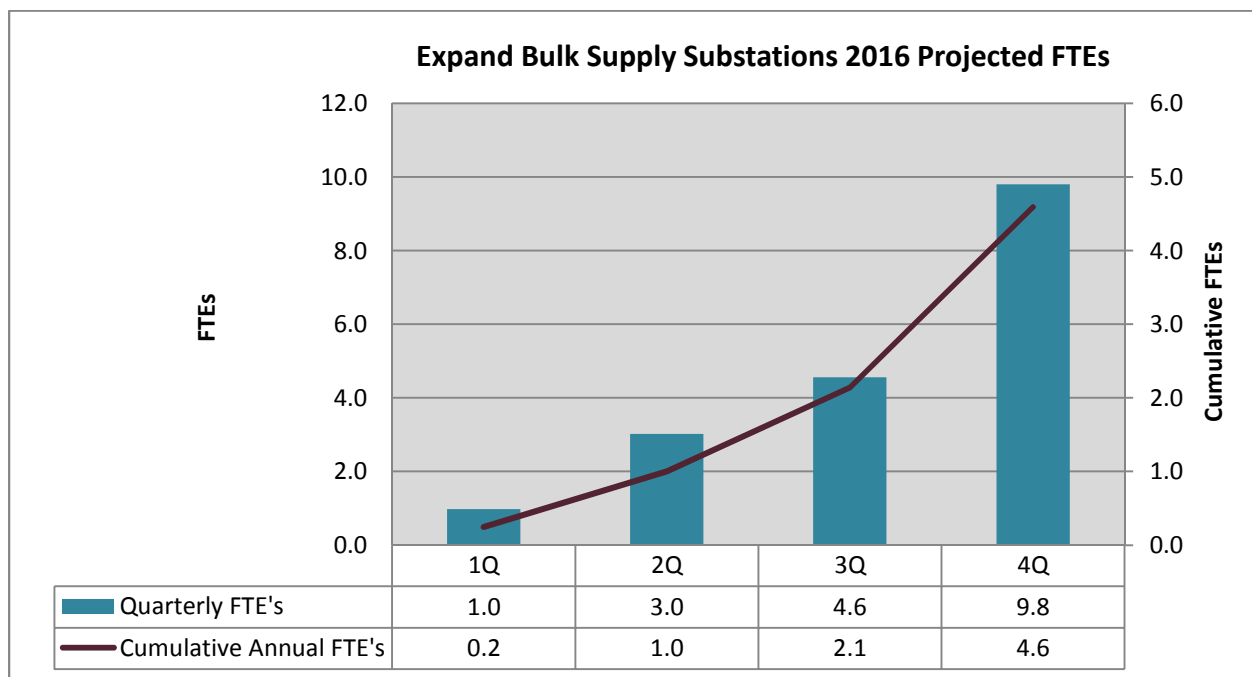
**Figure 1.N.2: Expand Bulk Supply Substations 2016 Capital Investments**



### 1.N.3: 2016 Program FTEs

Figure 1.N.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

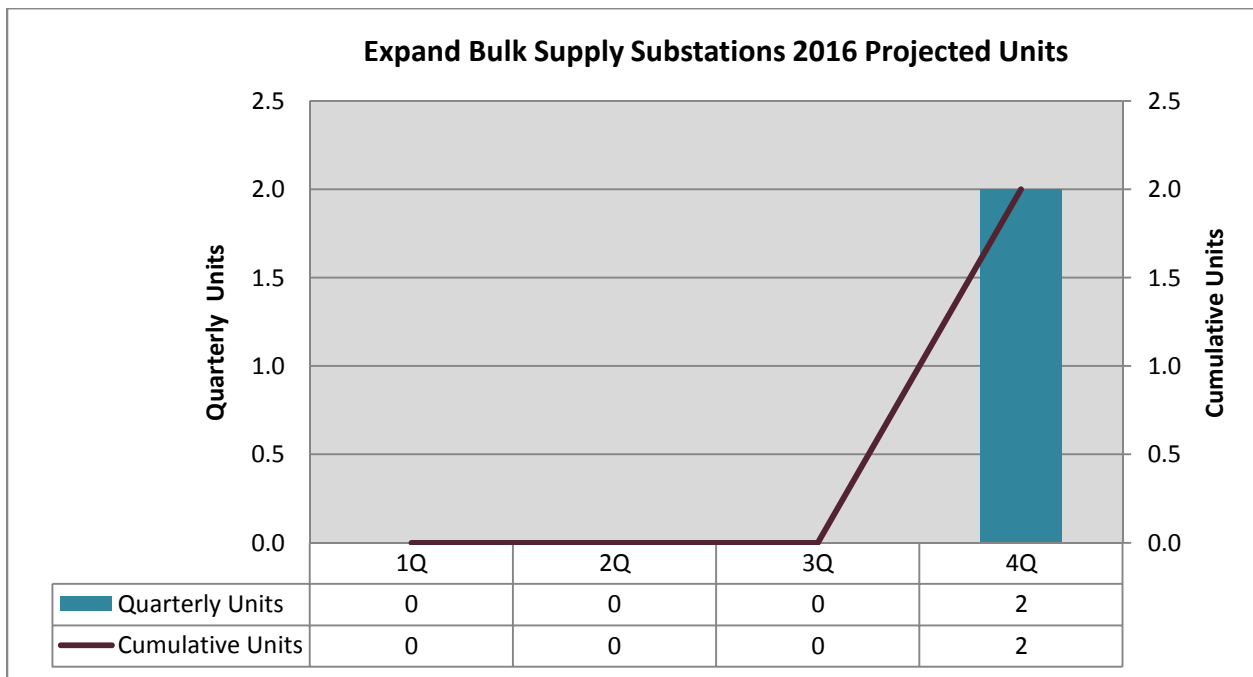
**Figure 1.N.3: Expand Bulk Supply Substations 2016 FTEs**



#### 1.N.4: Program Schedule/Units

Figure 1.N.4 shows the units to be completed under this program in 2016. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are projects.

**Figure 1.N.4: Expand Bulk Supply Substations 2016 Units**



## **Section 1.O: Underground Primary Distribution Cable**

### **1.O.1: 2016 Program Scope**

This program will replace or inject underground cable in 2016 that has been identified through historical outage information and engineering analysis. These cables may be either individual or multiple cable sections within an underground system.

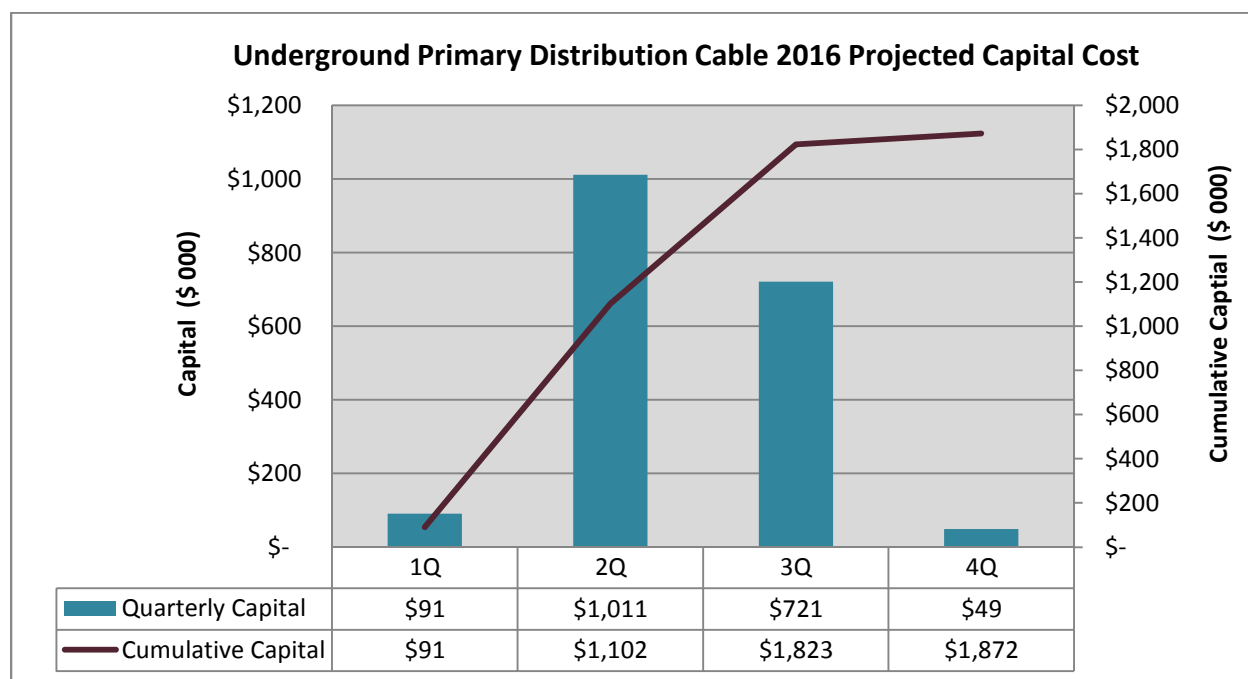
These projects were generally selected on the basis of:

1. Historical outage information
2. Age of the cable
3. Engineering analysis
4. Greatest number of customers
5. Workload management

## 1.O.2: 2016 Program Capital Investments

Figure 1.O.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.9 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

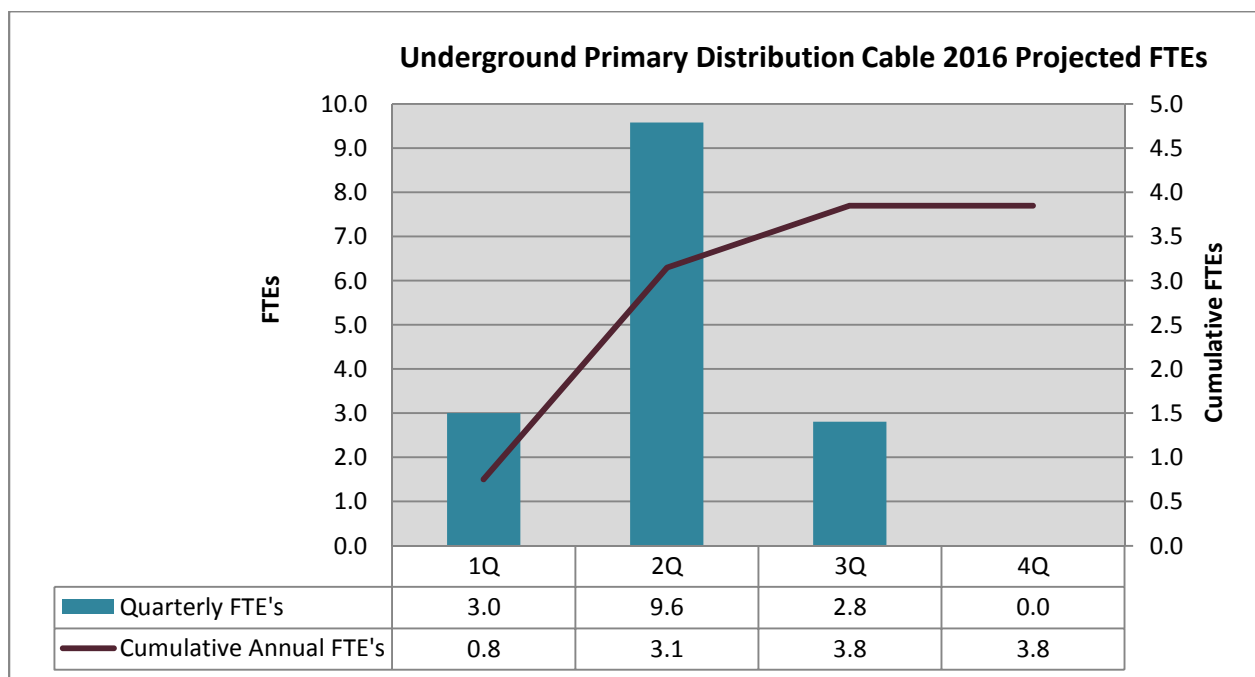
**Figure 1.O.2: Underground Primary Distribution Cable 2016 Capital Investments**



### 1.O.3: 2016 Program FTEs

Figure I.O.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

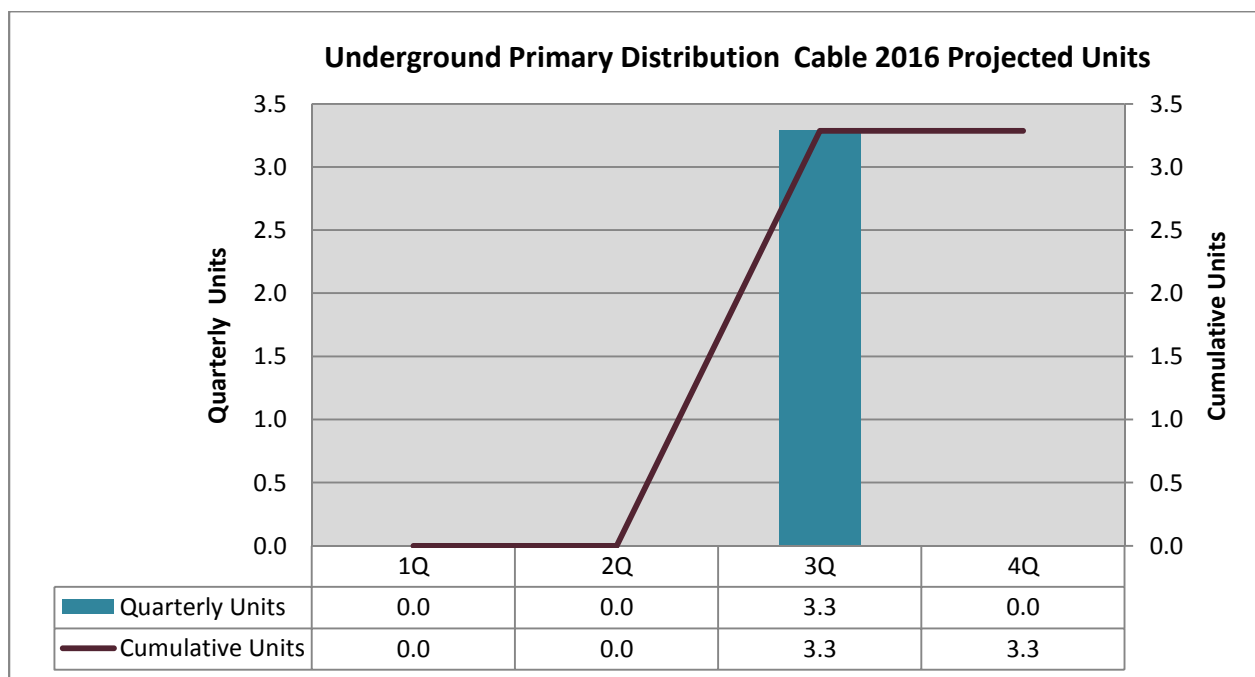
**Figure 1.O.3: Underground Primary Distribution Cable 2016 FTEs**



#### 1.O.4: Program Units

Figure 1.O.4 shows the units to be replaced in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown are miles.

**Figure 1.O.4: Underground Primary Distribution Cable 2016 Units**



## **Section 1.P: System Tie Primary Distribution**

### **1.P.1: 2016 Program Scope**

This program plans to build or reconductor primary distribution circuits to tie primary distribution circuits together for better operating efficiency and reliability. This could include making distribution ties between adjacent substations, tying legacy company circuits together that are in closer proximity, or tying to other utility sources such as Co-Ops and municipalities.

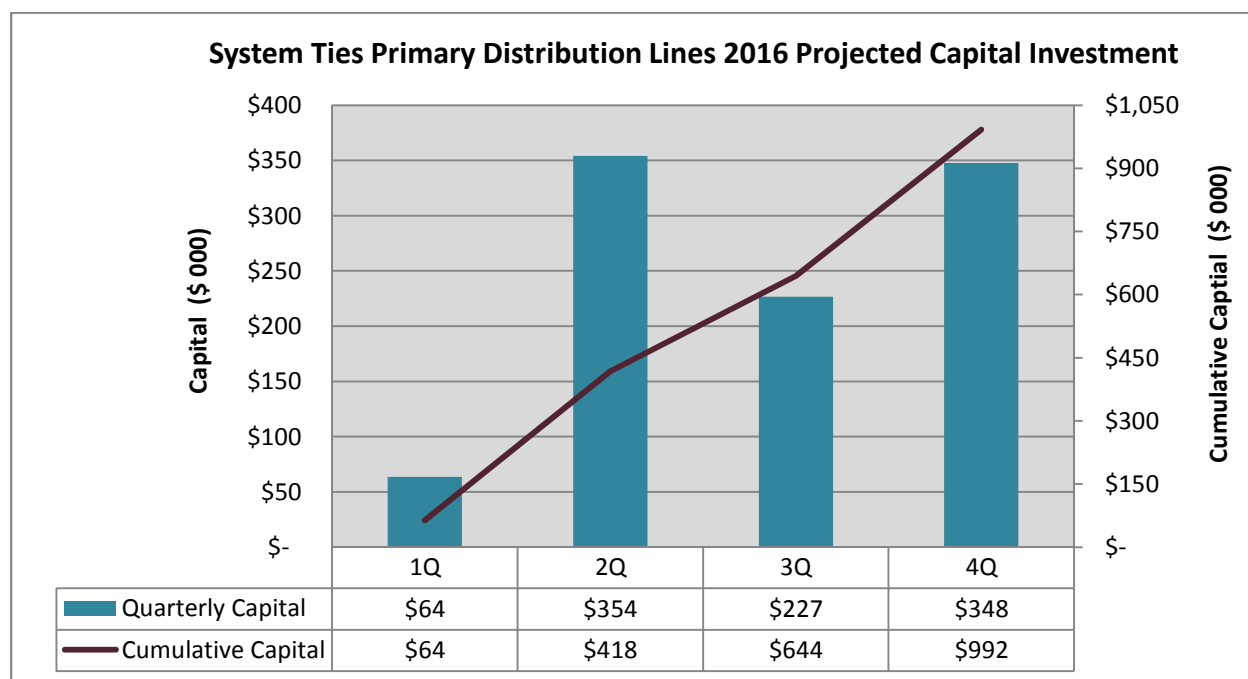
System tie projects were generally selected based on:

1. System benefit
2. Greatest number of customers.
3. Outage history
4. Workload management

### 1.P.2: 2016 Program Capital Investments

Figure 1.P.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.0 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

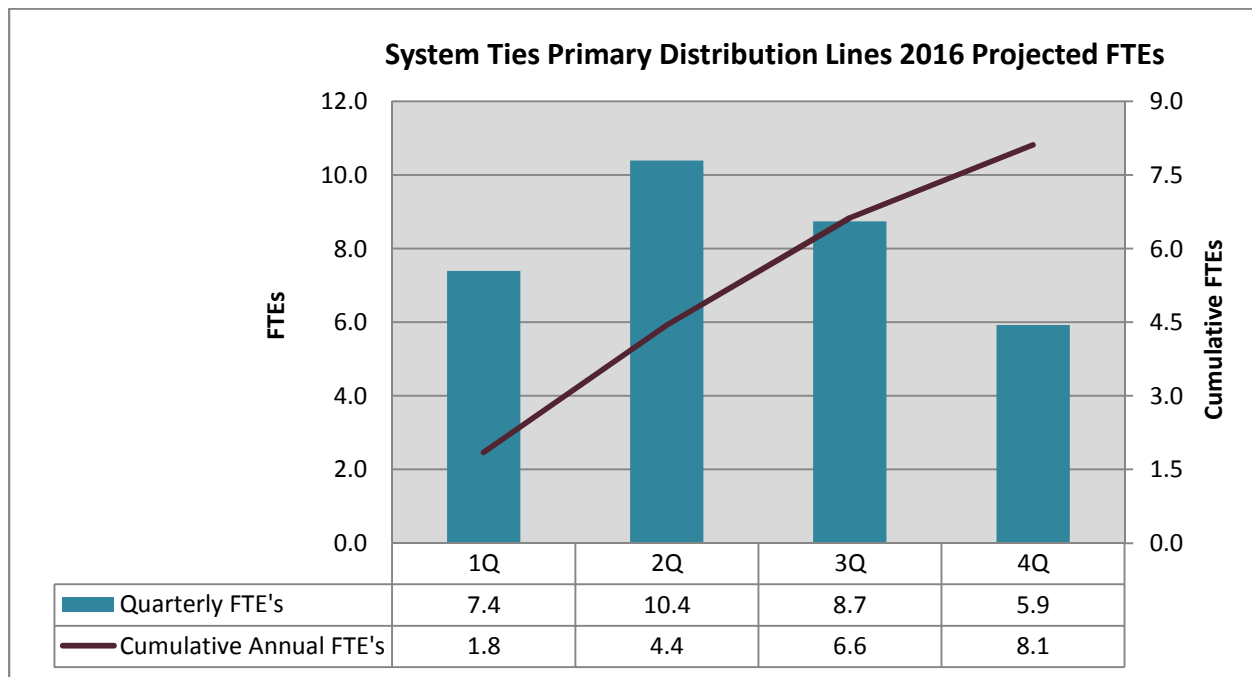
**Figure 1.P.2: System Ties Primary Distribution Lines 2016 Capital Investments**



### 1.P.3: 2016 Program FTEs

Figure 1.P.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

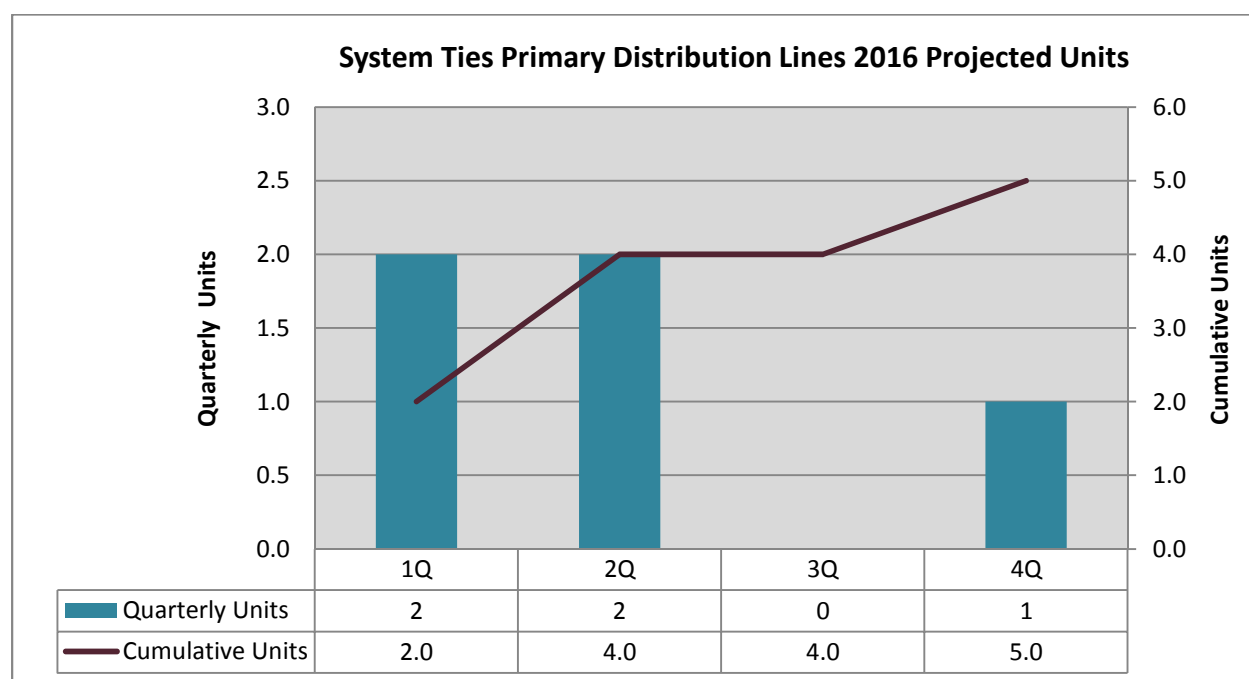
**Figure 1.P.3: System Ties Primary Distribution Lines 2016 FTEs**



### 1.P.4: Program Units

Figure 1.P.4 shows the units to be replaced in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown are projects.

**Figure 1.P.4: System Ties Primary Distribution Lines 2016 Units**



## **Section 1.Q: CERT Remediation**

### **1.Q.1: 2016 Program Scope**

The program specifically targets existing CERT and potential CERT customers that have exceeded the reliability criteria for two consecutive years. These projects may include such items as rebuilding portions of distribution circuits, building new circuit ties, or installation of targeted distribution automation schemes.

These projects were generally selected on the bases of:

1. Number of existing or potential CERT customers
2. Historical outage information
3. Scope of each individual project
4. Workload management

### **1.Q.2: 2016 Program Capital Investments**

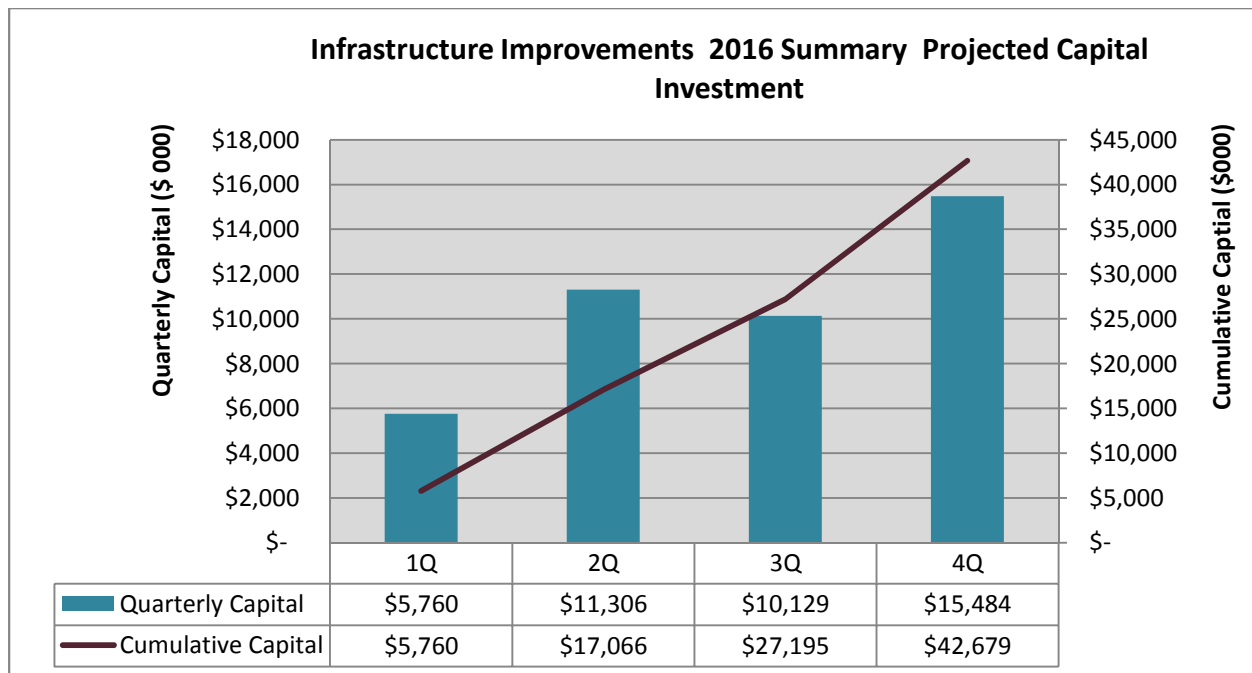
There are no projected capital expenditures expected in this program for 2016.

## Section 1.R: Infrastructure Improvement Summary

### 1.R.1: Summary 2016 Capital Expenditures

Figure 1.R.1 represents the projected total capital expenditures for the Infrastructure Improvement programs under the Infrastructure and Modernization portion of the Act, excluding the Training Facilities. The Training Facilities are shown separately. AIC estimates the summary cost to be \$42.7 million in capital investment, plus associated expenses over the program period. Estimates of cost, scope of work, and schedules for that work may evolve over time.

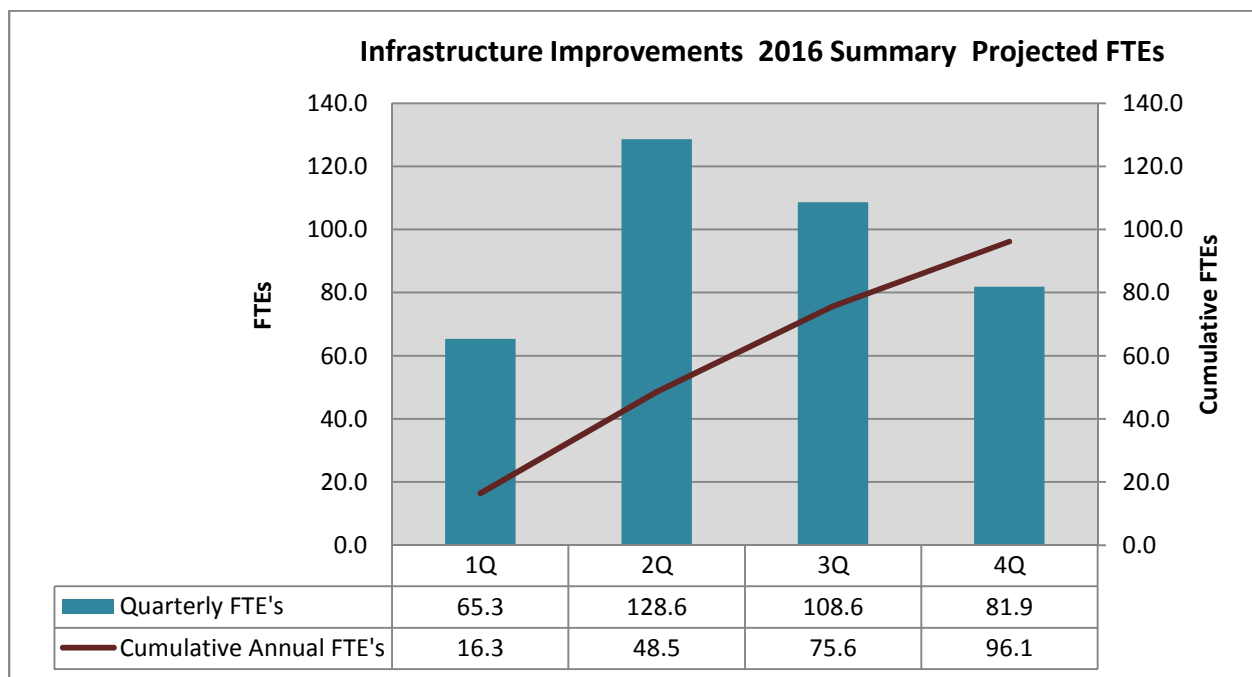
**Figure 1.R.1: Infrastructure Improvement Summary 2016 Capital Investments**



## 1.R.2: Program FTEs

Figure 1.R.2 represents the projected FTEs required to perform the scheduled scope of work. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 1.R.2: Infrastructure Improvement Summary 2016 FTEs**



## **Section 2: Training Facilities**

### **Section 2A: Training Facilities**

#### **2.A.1: 2016 Program Scope**

There are no projected expenditures under this program in 2016.

## **Section 3: Distribution Automation Programs**

### **Section 3.A: Primary Distribution Automation**

#### **3.A.1: 2016 Program Scope**

This program is designed to install primary distribution level automation schemes in a self-isolating mode. In some cases smart switching devices will be installed in order to facilitate the automatic isolation of the faulted section and restoration of the remaining load. In addition to installation of the appropriate line devices, this program will install metering and control on the distribution substation equipment if not equipped.

Benefits include, where possible, the limiting of the aggregate load experiencing a permanent outage due to a fault on a primary distribution backbone feeder to approximately half the load of the feeder. In some cases it may also avoid the loss of an entire feeder load due to the loss of supply, such as a substation bus, transformer, or high voltage distribution line.

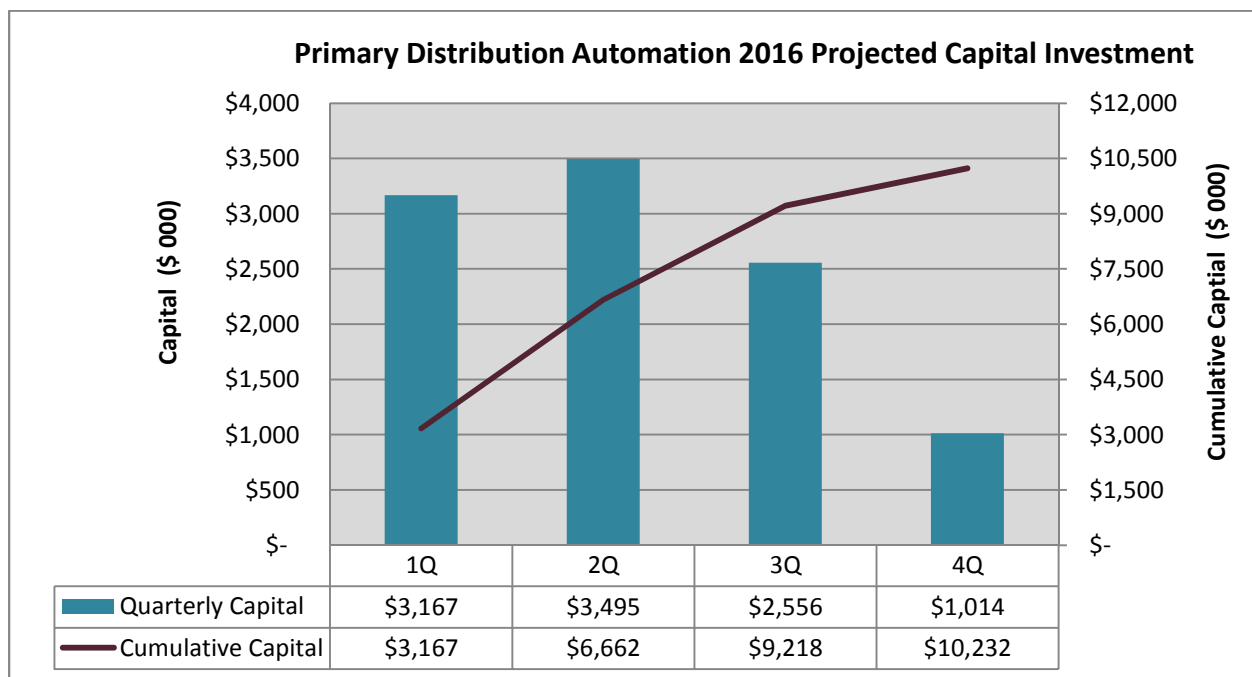
These projects were generally selected on the basis of:

1. Greatest number of customers
2. Historical outage information
3. Complexity of the project
4. Communication infrastructure requirements
5. Workload management

### 3.A.2: 2016 Program Capital Investments

Figure 3.A.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$10.2 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

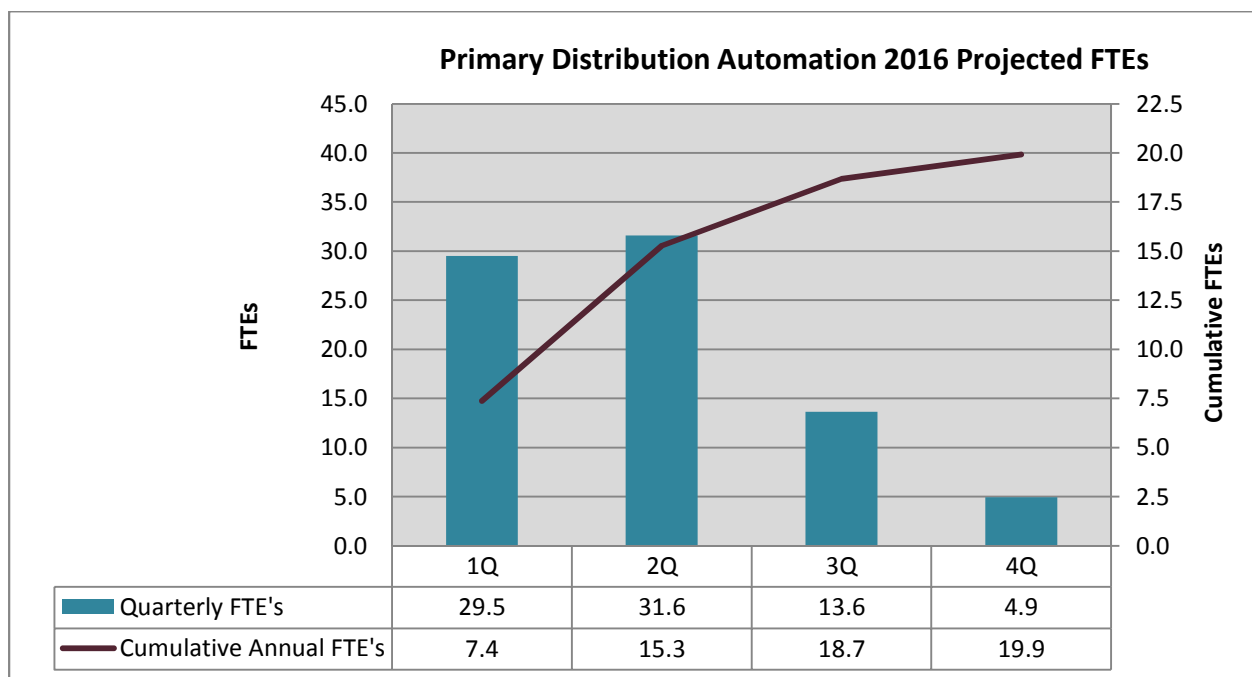
**Figure 3.A.2: Primary Distribution Automation 2016 Capital Investments**



### 3.A.3: 2016 Program FTEs

Figure 3.A.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

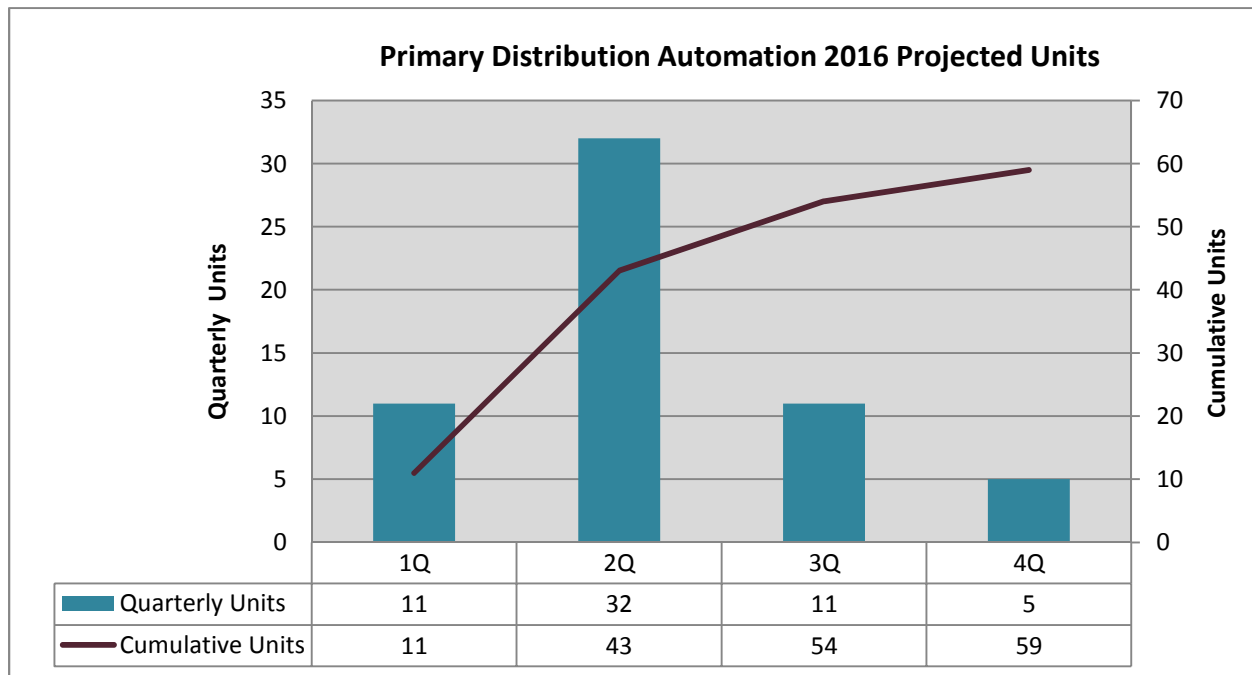
**Figure 3.A.3: Primary Distribution Automation 2016 FTEs**



### 3.A.4: Program Schedule/Units

Figure 3.A.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown are projects.

**Figure 3.A.4: Primary Distribution Automation 2016 Units**



## **Section 3.B: Communication Infrastructure**

### **3.B.1: 2016 Program Scope**

The AIC's Communications Infrastructure program is foundational to allowing the other Smart Grid programs to obtain their desired benefits. This program will focus on delivering secure, performance-driven communications solution(s). The program will leverage a combination of different communication technologies due to tradeoffs in cost, coverage, bandwidth, latency, reliability, etc. Both public cellular and private RF communications will be converged, as appropriate, onto Internet Protocol (IP) based architecture.

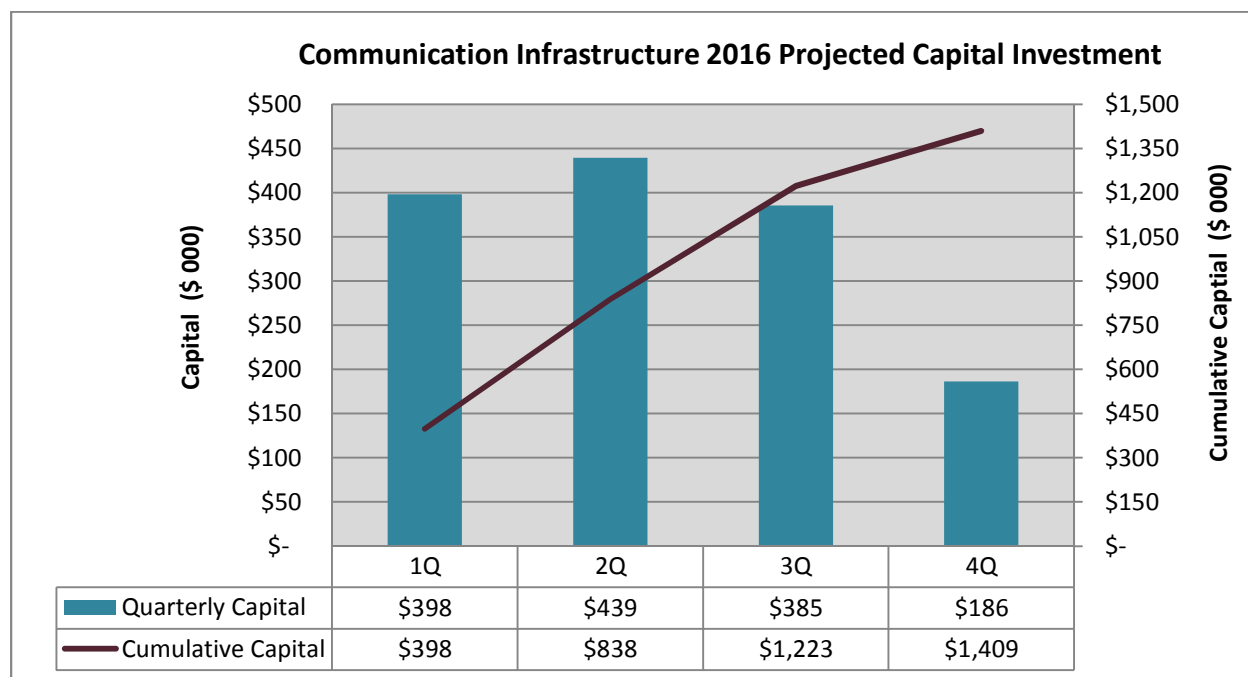
In 2016, AIC will continue the planning, design and procurement phases for the Smart Grid Communications Network (SGCN). The design and deployment activities will address the core SGCN requirements of performance, security, manageability, upgradeability, and reliability as aligned with the smart grid application(s) being supported. Multi-layered network communications models will incorporate Internet Protocol (IP) services to 1) ensure maximum interoperability based upon current standards that are both available and generally accepted as best practice and 2) to the maximum extent possible, comply with standards that have been deemed relevant by National Institute of Standards and Technology (NIST) and the Smart Grid Interoperability Panel (SGIP). As mentioned previously, not only will both public and private wireless services be used, but also wired technologies will be leveraged as appropriate to continue to address performance and cyber security requirements, as well as to optimize costs. Cyber security (to include, but not be limited to, the implementation of best-practice security processes, procedures, standards and technologies) will be incorporated from an end-to-end, holistic perspective starting in the initial years of planning, design and deployment. The

footprint of the private wireless will be expanded to cover a larger portion of the AIC territory with addition of two new 900 MHz master radio locations and three new 3.65 GHz WiMAX Master radio locations. This will reduce overall long-term cost and increase responsiveness to provide secure control for field distribution automation control applications.

### 3.B.2: 2016 Program Capital Investments

Figure 3.B.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.4 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

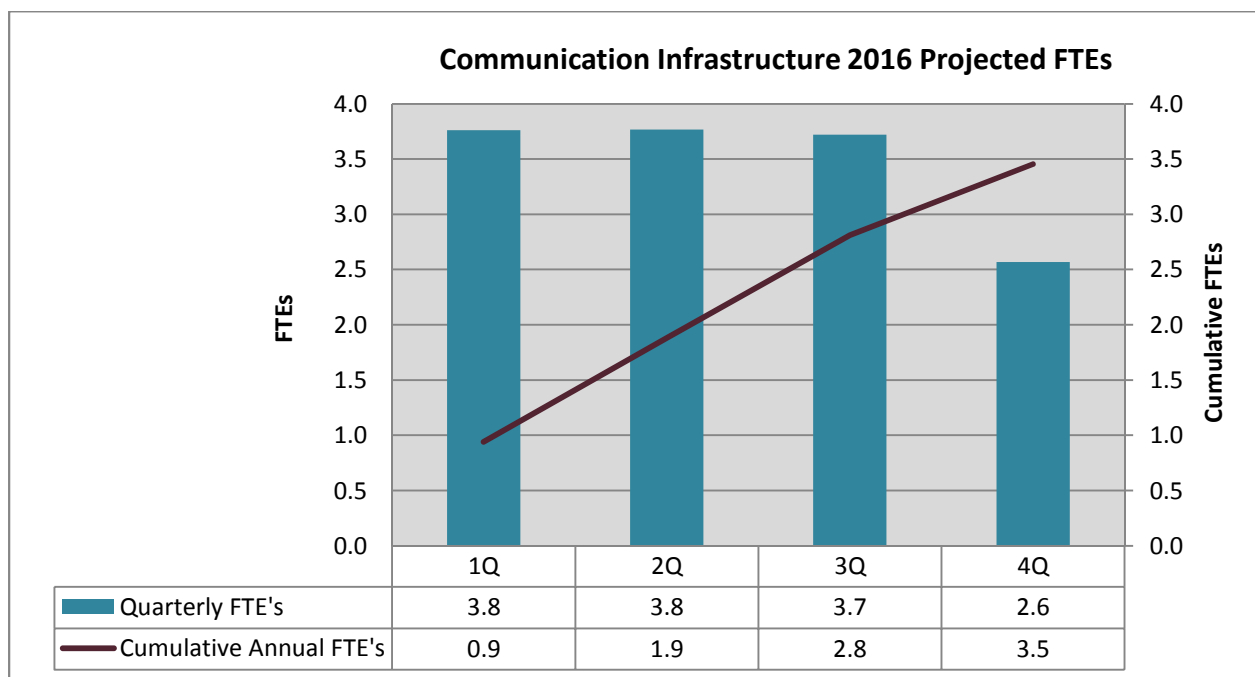
**Figure 3.B.2: Communication Infrastructure 2016 Capital Investments**



### 3.B.3: 2016 Program Schedule/FTEs

Figure 3.B.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 3.B.3: Communication Infrastructure 2016 FTEs**



## **Section 3.C: High Voltage Distribution Relaying**

### **3.C.1: 2016 Program Scope**

This program is to replace electro-mechanical relays on the high voltage distribution system with microprocessor based relays. Some of the expected benefits are

1. Provide distance to fault data to system control to accelerate outage restoration
2. Relay health status continuously monitored by SCADA
3. Detailed fault data for post disturbance evaluation
4. Reduced maintenance due to longer testing intervals.

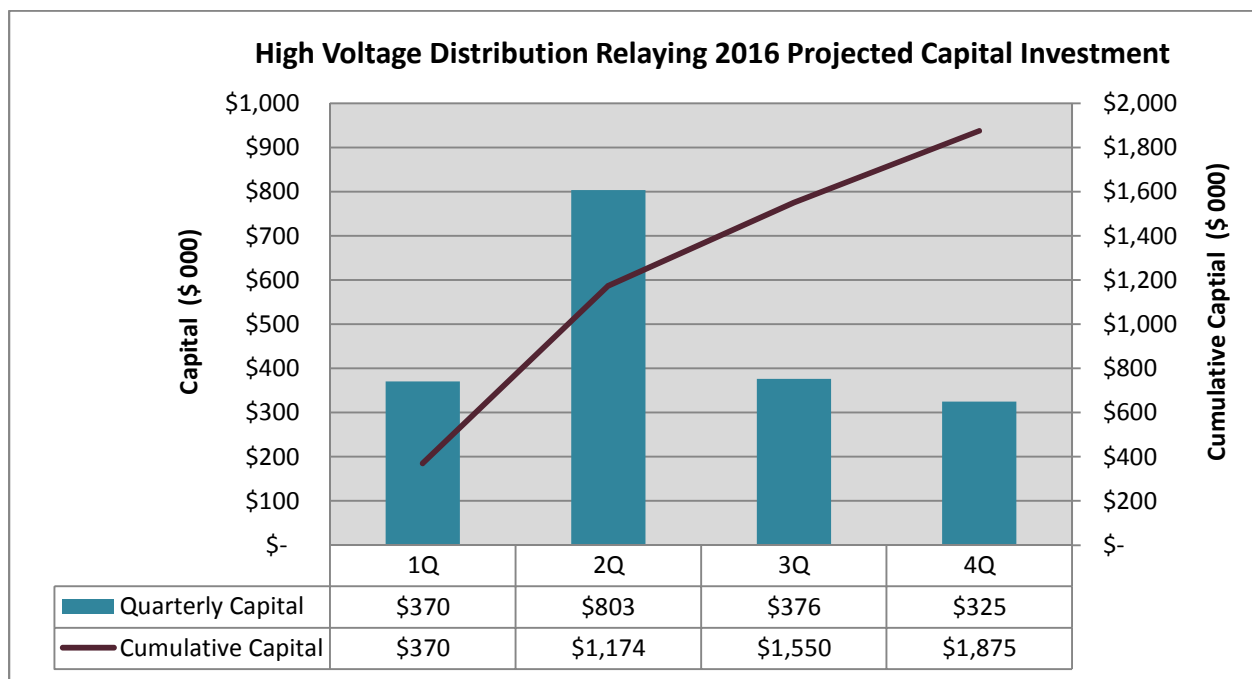
Project selection is generally based on.

1. Historical performance.
2. Greatest number of customers
3. Complexity of project
4. Workload management

### 3.C.2: 2016 Program Capital Investments

Figure 3.C.2 represents the projected capital expenditure for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.9 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

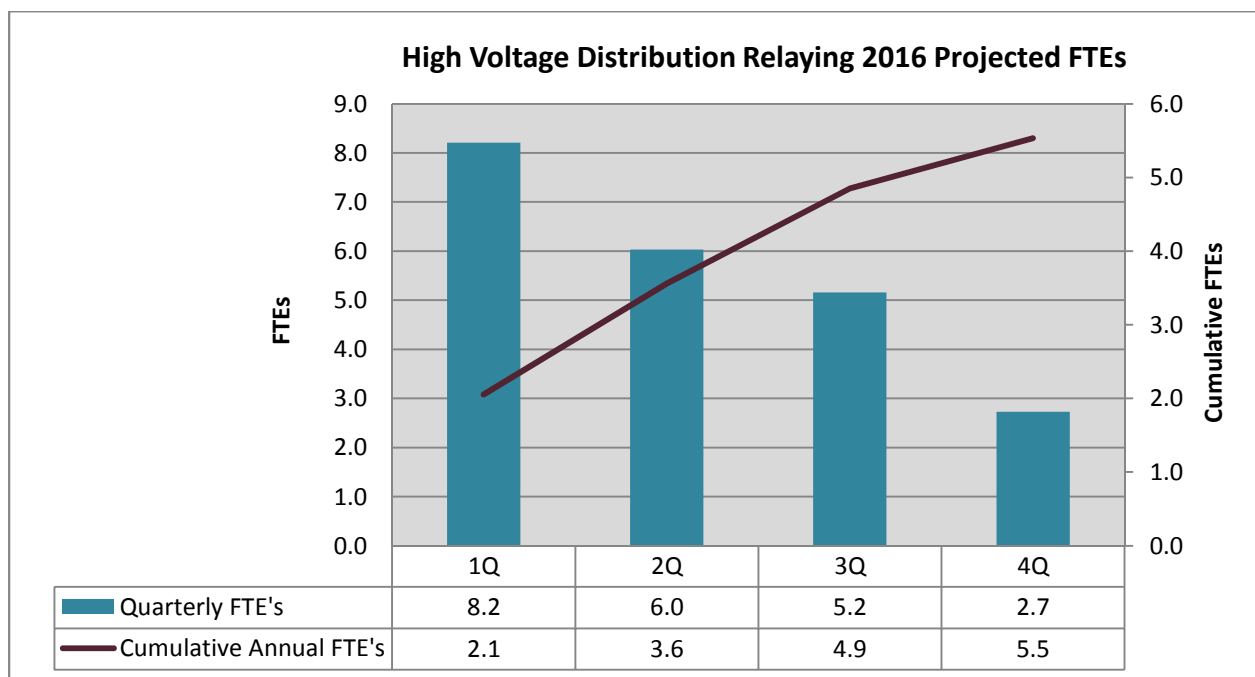
**Figure 3.C.2: High Voltage Distribution Relaying 2016 Capital Investments**



### 3.C.3: 2016 Program FTEs

Figure 3.C.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

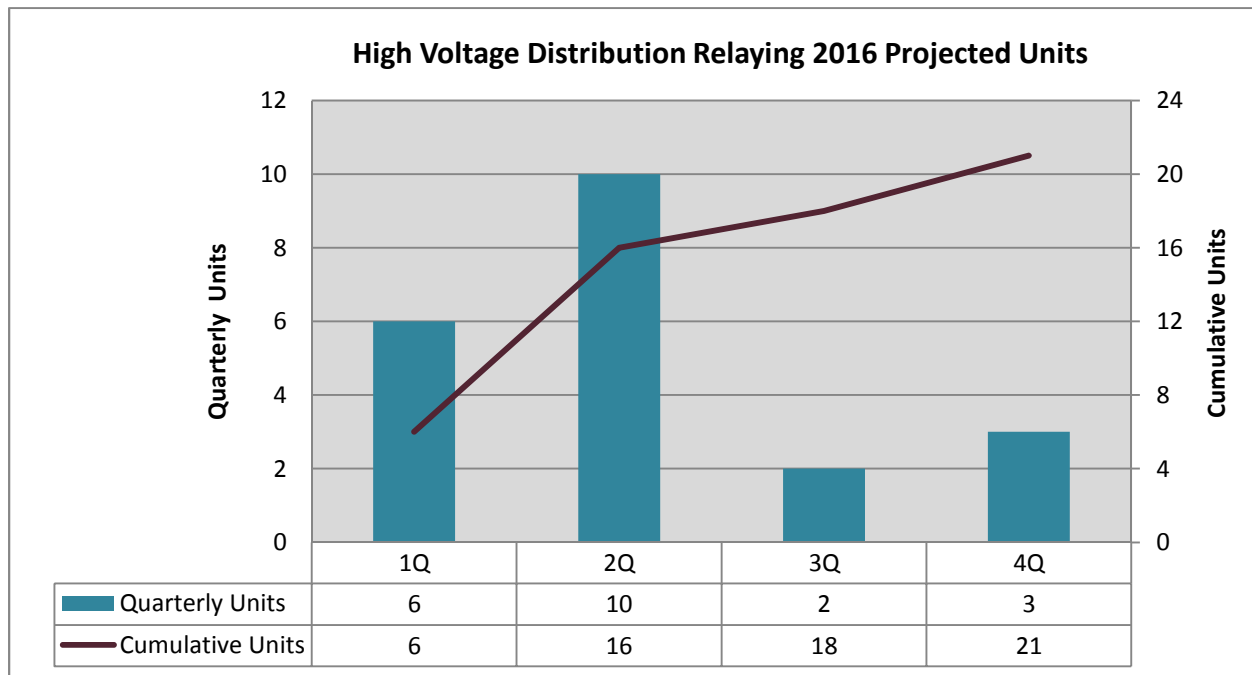
**Figure 3.C.3: High Voltage Distribution Relaying 2016 FTEs**



### 3.C.4: Program Schedule/Units

Figure 3.C.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown are terminals.

**Figure 3.C.4: High Voltage Distribution Relaying 2016 Units**



## **Section 3.D: Distribution Substation Metering**

### **3.D.1: 2016 Program Scope**

This program will add distribution substation transformer and circuit load metering at select substations that currently do not have remote read capability. These meters will be remotely read and reported through the SCADA system. Benefits include the ability to accurately collect load information for engineers to determine the most efficient options for upgrading the electric system.

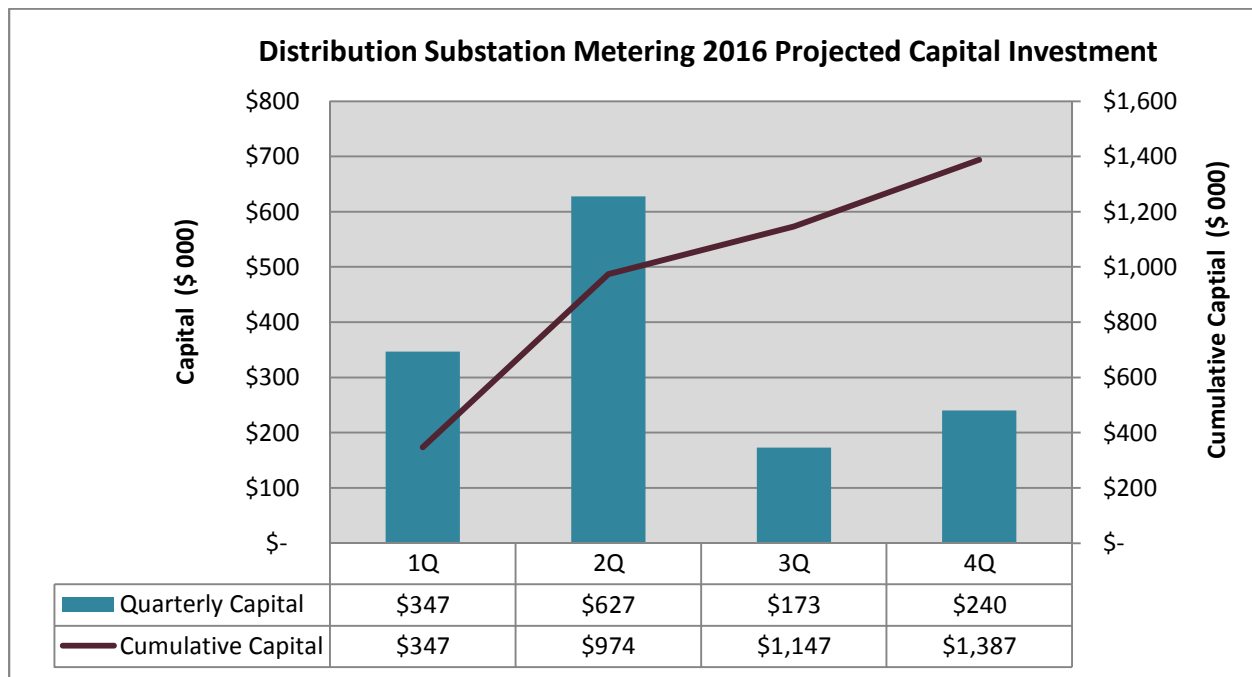
Project selection will be generally based on.

1. Load vs. equipment ratings.
2. Communication availability.
3. Criticality of load.
4. Workload management

### 3.D.2: 2016 Program Capital Investments

Figure 3.D.2 represents the projected 2016 capital expenditure for this program. AIC estimates the 2016 program cost to be approximately \$1.4 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

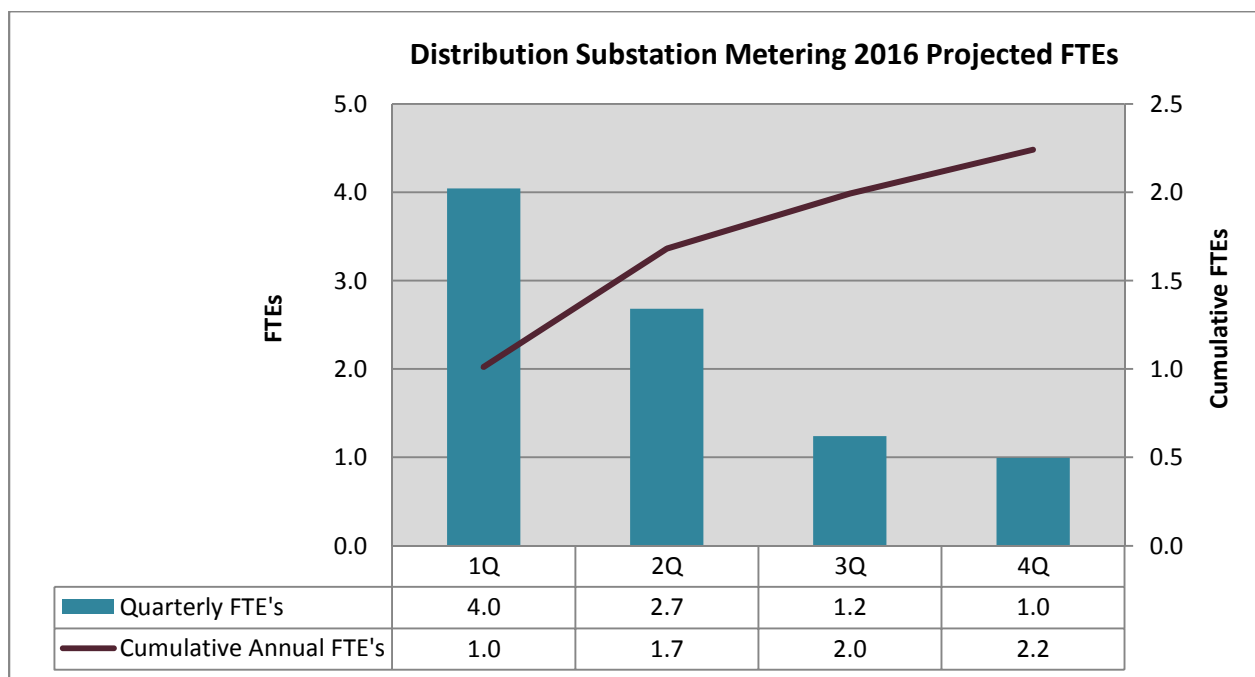
**Figure 3.D.2: Distribution Substation Metering 2016 Capital Investments**



### 3.D.3: 2016 Program FTEs

Figure 3.D.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

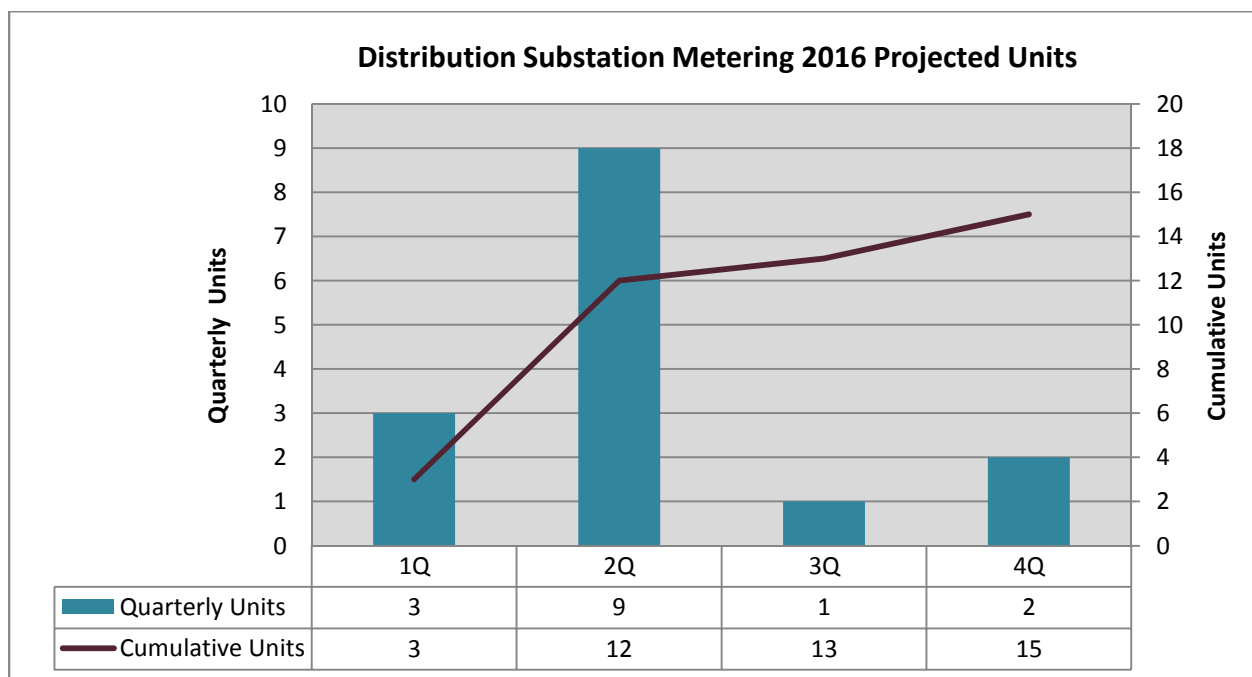
**Figure 3.D.3: Distribution Substation Metering 2016 FTEs**



### 3.D.4: Program Schedule/Units

Figure 3.D.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown are projects.

**Figure 3.D.4: Distribution Substation Metering 2016 Projected Units**



## **Section 3.E: High Voltage Distribution Automation**

### **3.E.1: 2016 Program Scope**

This program will install smart switching devices on the high voltage distribution system in order to facilitate the automatic isolation of faulted line sections and the restoration of the remaining loads. It also includes the installation of remote fault current indicators (FCI) at select locations to help identify fault location. Benefits include a reduction in the amount of customers experiencing an extended outage, and faster fault location.

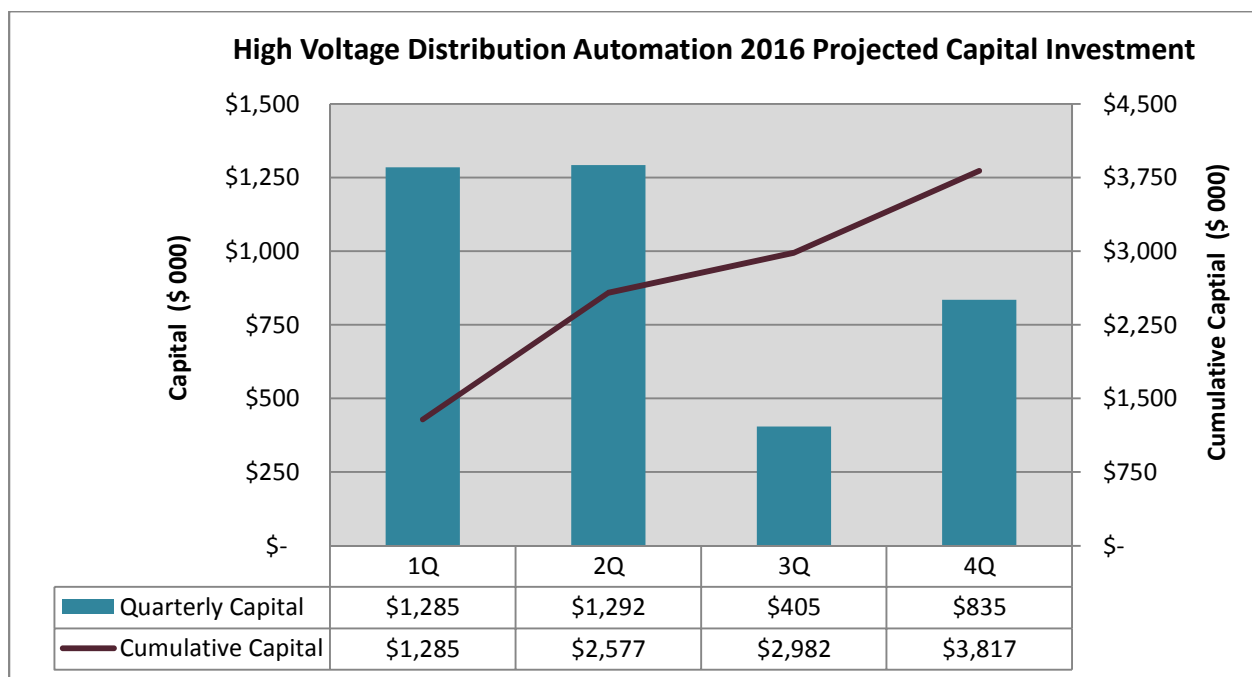
Projects were generally selected on the basis of:

1. Greatest number of customers
2. Circuit configuration
3. System benefit
4. Historical outage information
5. Communication availability
6. Workload Management

### 3.E.2: 2016 Program Capital Investments

Figure 3.E.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$3.8 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

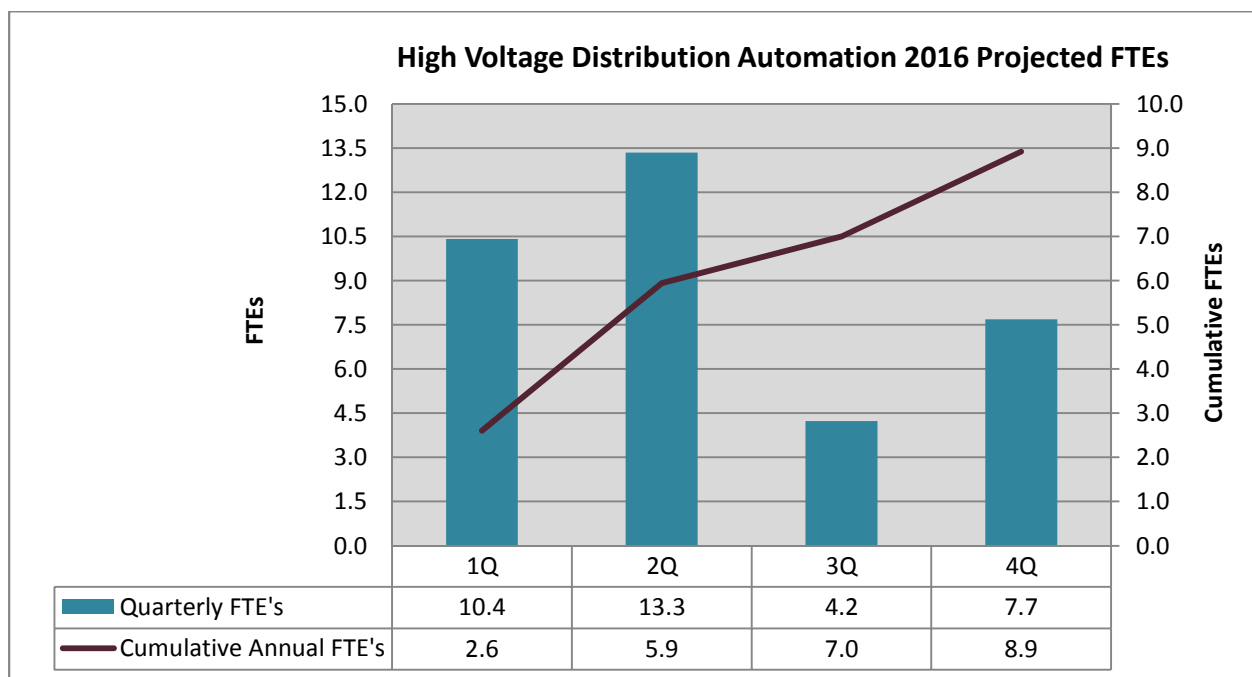
**Figure 3.E.2: High Voltage Distribution Automation 2016 Capital Investments**



### 3.E.3: 2016 Program FTEs

Figure 3.E.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

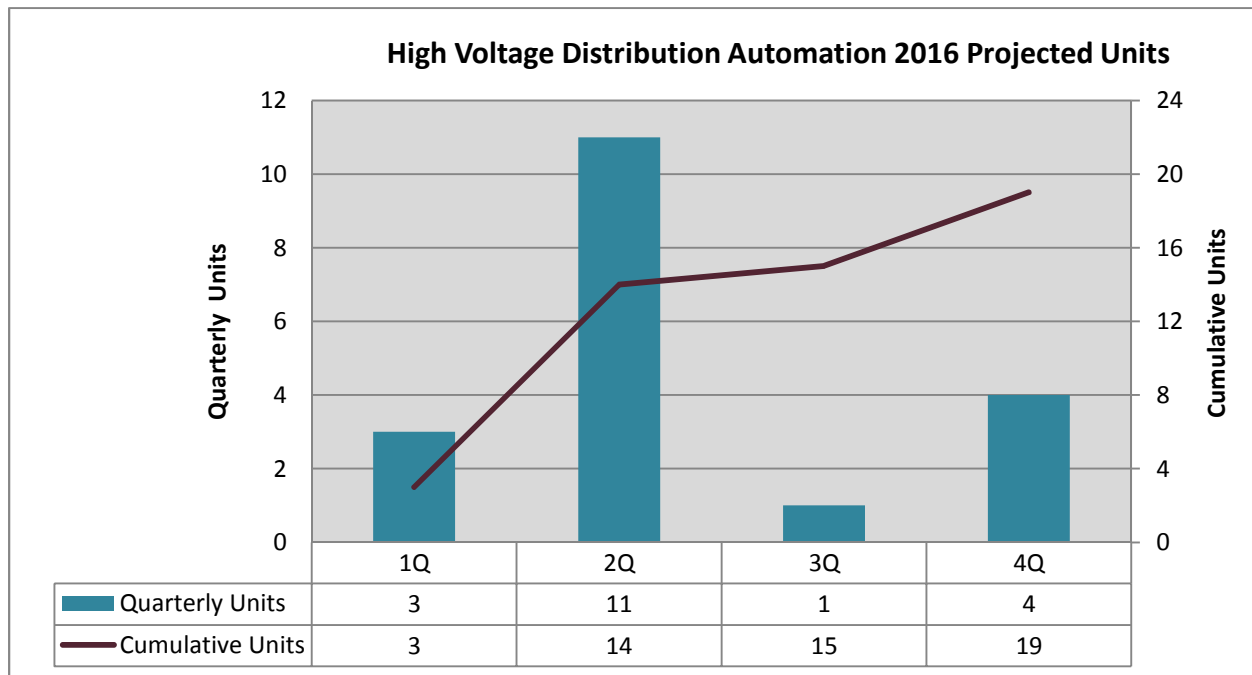
**Figure 3.E.3: High Voltage Distribution Automation 2016 FTEs**



### 3.E.4: Program Units/Schedule

Figure 3.E.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are projects.

**Figure 3.E.4: High Voltage Distribution Automation 2016 Units**



## **Section 3.F: Test Bed**

### **3.F.1: 2016 Program Scope**

There are no projected expenditures under this program in 2016.

## **Section 3.G: Underground Network Modernization**

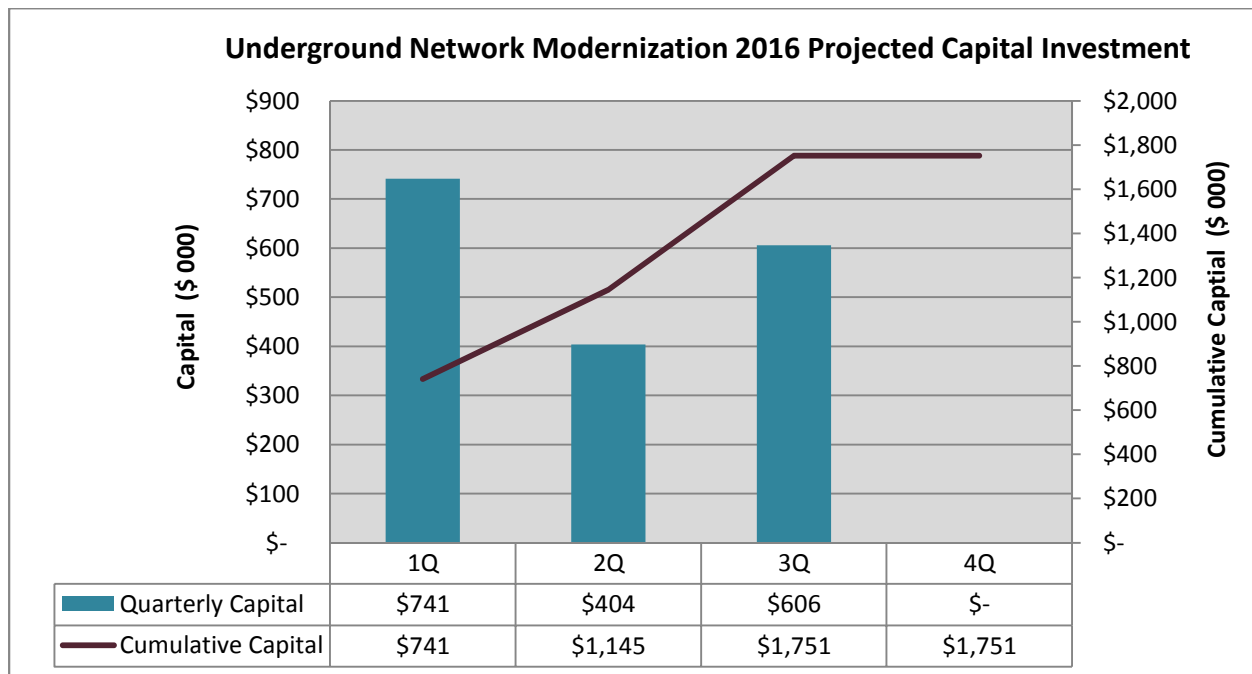
### **3.G.1: 2016 Program Scope**

Ameren Illinois has over 150 network protectors in service. They are becoming increasingly difficult to maintain. This program is to replace the 1950 vintage network protectors with modern solid state network protectors. The new protectors will have SCADA remote communication and monitoring capabilities. This will ensure the safe isolation of network faults and allow for maintenance without time consuming switching or arc flash mitigation.

### 3.G.2: 2016 Program Capital Investments

Figure 3.G.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.8 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

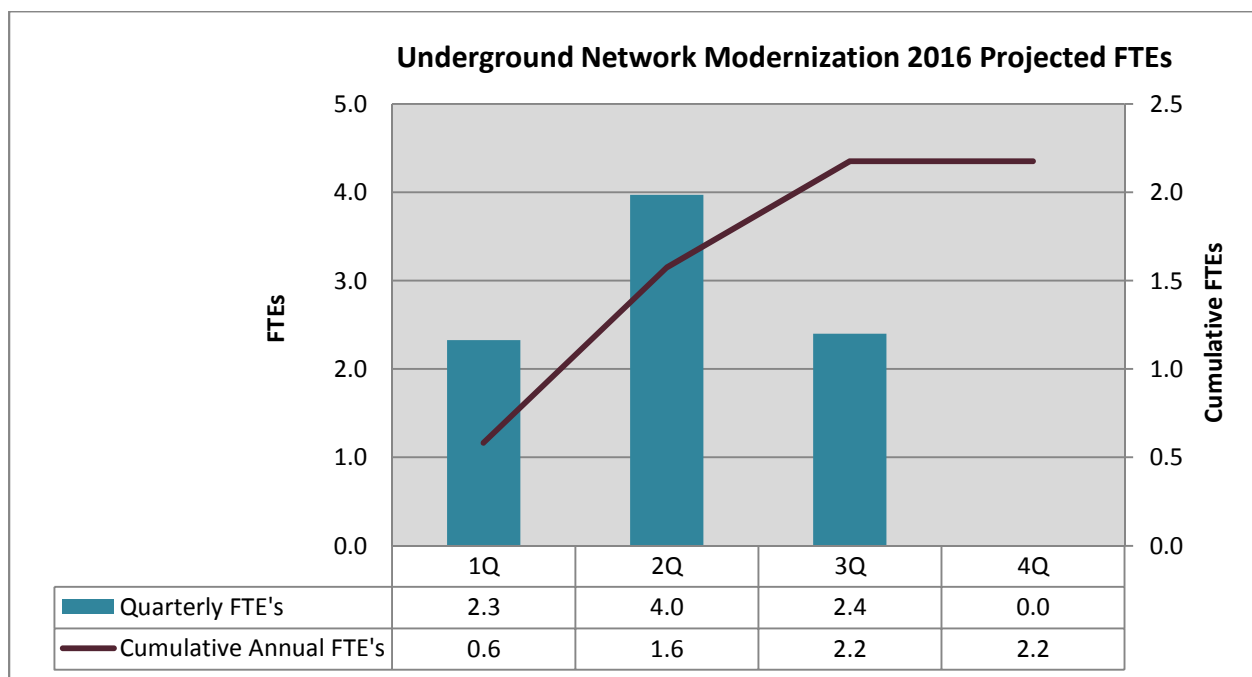
**Figure 3.G.2: Underground Network Modernization 2016 Capital Investments**



### 3.G.3: 2016 Program FTEs

Figure 3.G.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

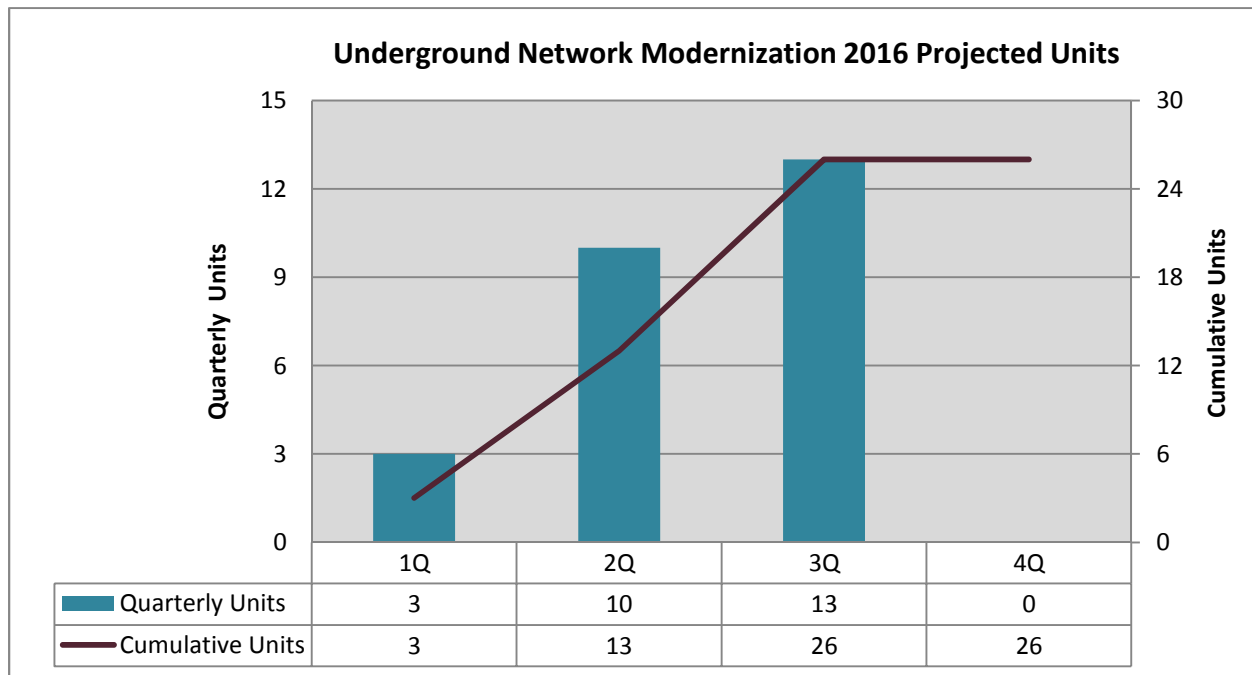
**Figure 3.G.3: Underground Network Modernization 2016 FTEs**



### 3.G.4: Program Units/Schedule

Figure 3.G.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are protectors upgraded or replaced.

**Figure 3.G.4: Underground Network Modernization 2016 Units**



## **Section 3.H: Distributed Energy Resource Integration**

### **3.H.1: 2016 Program Scope**

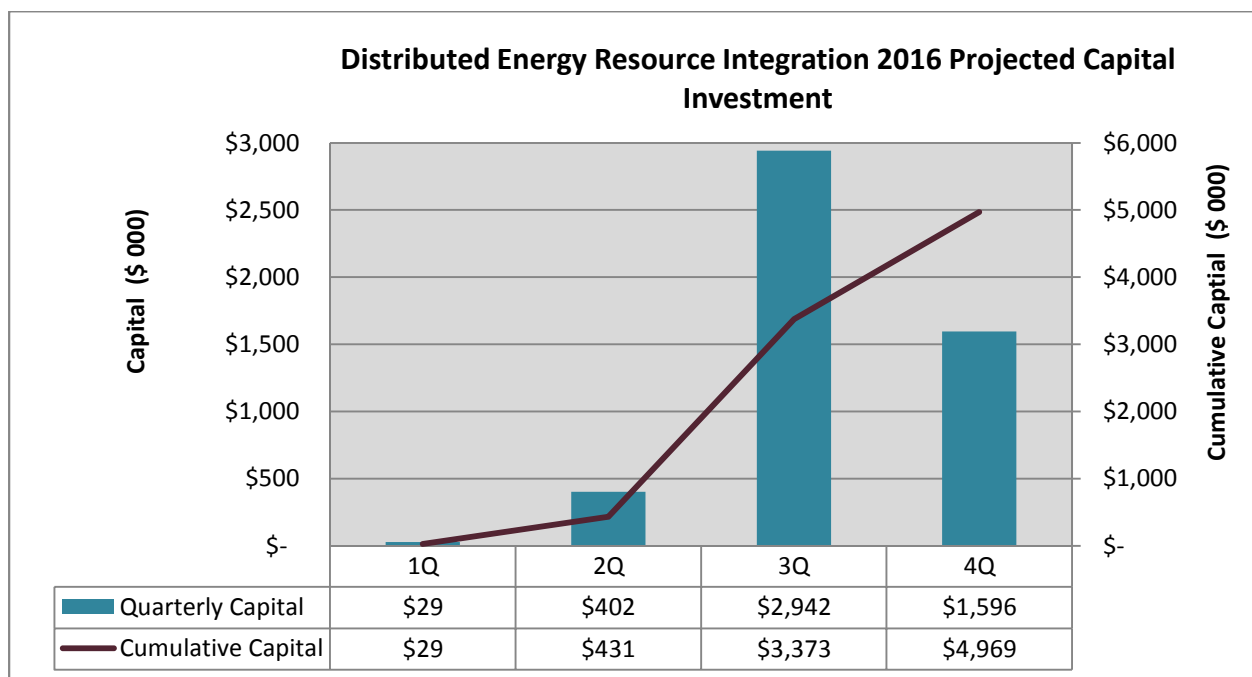
As more distributed energy resources, including renewable resources, are added to the distribution grid, and our customers desire continued improvements in electric system reliability and resiliency, Ameren Illinois will need to better understand and develop the expertise to safely, efficiently, and cost-effectively integrate distributed energy resources into the electric distribution grid, up to and including the ability to island sections of the grid as appropriate. This program is to install at and in the vicinity of Ameren Illinois' Technology Applications Center (TAC) in Champaign Illinois distributed energy resources (battery storage, solar, wind, and natural gas generation), demand management systems, communication and control systems, and associated distribution lines, transformers, and switchgear to provide the Smart Grid enabling infrastructure to test distributed energy resource control, integration, dispatch, system islanding, microgrid functionality, and local demand management.

This Smart Grid enabling infrastructure will allow Ameren Illinois to test and develop the capabilities to manage demand, control and economically dispatch customer and utility owned distributed energy resources to enable grid congestion management, assist in voltage control, provide operating reserves, provide frequency regulation, and increase reliability. Ameren Illinois currently does not have the appropriate infrastructure to fully test and develop these capabilities. These capabilities will assist Ameren Illinois in the integration of distributed energy resources and the creation of microgrids throughout its electric delivery system, as such resources and facilities become available. This testing infrastructure will also enhance Ameren Illinois' on-grid smart grid testing capabilities available for external applicant technology testing.

### 3.H.2: 2016 Program Capital Investments

Figure 3.H.2 represents the projected capital investment for this program in 2016. AIC estimates the 2016 program cost to be approximately \$5.0 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

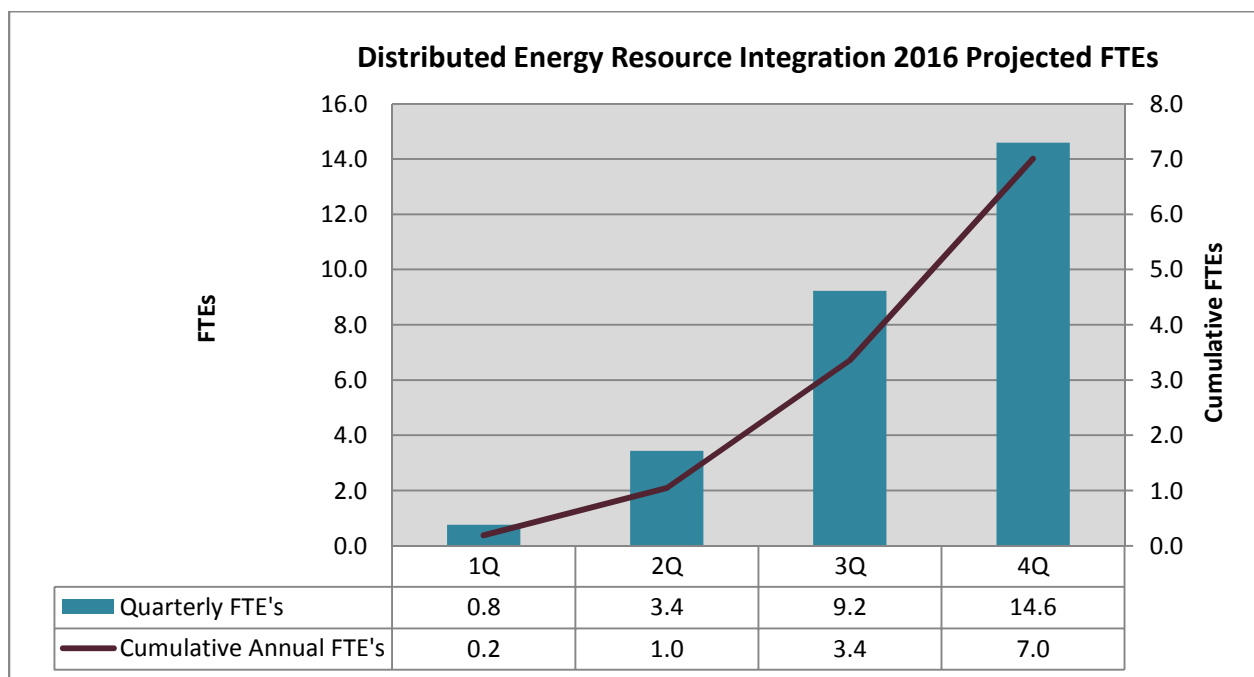
**Figure 3.H.2: Distributed Energy Integration 2016 Capital Investments**



### 3.H.3: 2016 Program FTEs

Figure 3.H.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 3.H.3: Distributed Energy Resource Integration 2016 FTEs**

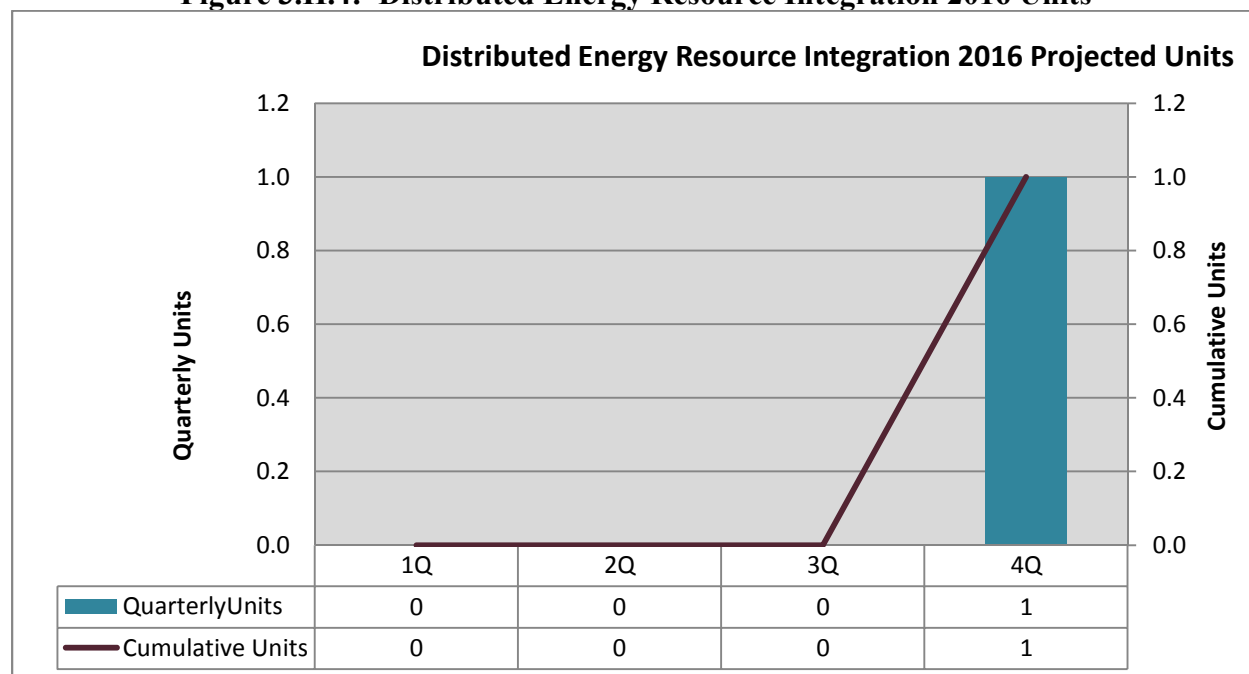


### 3.H.4: Program Units/Schedule

Figure 3.H.4 shows the number of units to be completed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time.

There is one project planned in 2016 by installing distributed energy resources (DER) at the TAC site, plus the necessary transformer, switchgear, conductor, and control technology to interconnect and operate. 2017 will include installation of additional battery storage, distribution tie-points, and switchgear.

**Figure 3.H.4: Distributed Energy Resource Integration 2016 Units**

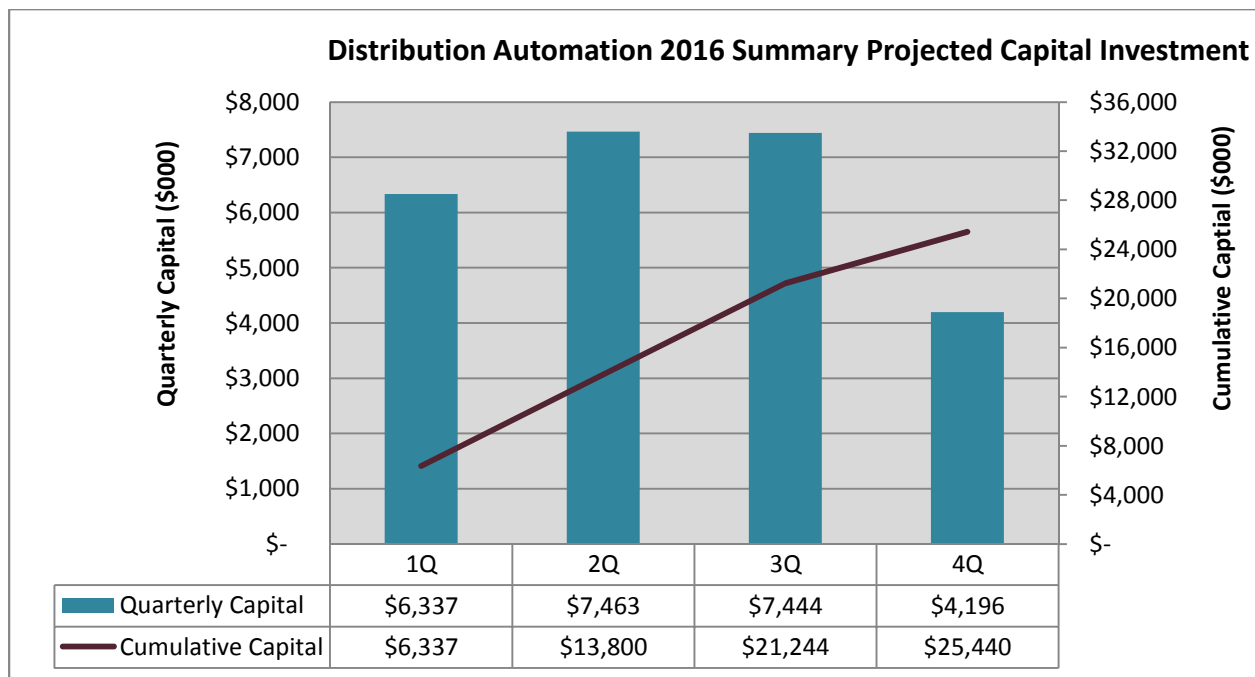


## Section 3.I: Distribution Automation Summary

### 3.I.1: Summary Budget

Figure 3.I.1 represents the projected capital budget for the Distribution Automation portion of the Act's Smart Grid investment. It does not include the AMI program. AIC estimates the program cost to be \$25.4 million in capital investment, plus associated expenses over the program period. Estimates of cost, and scope of work, and schedules for that work, may evolve over time.

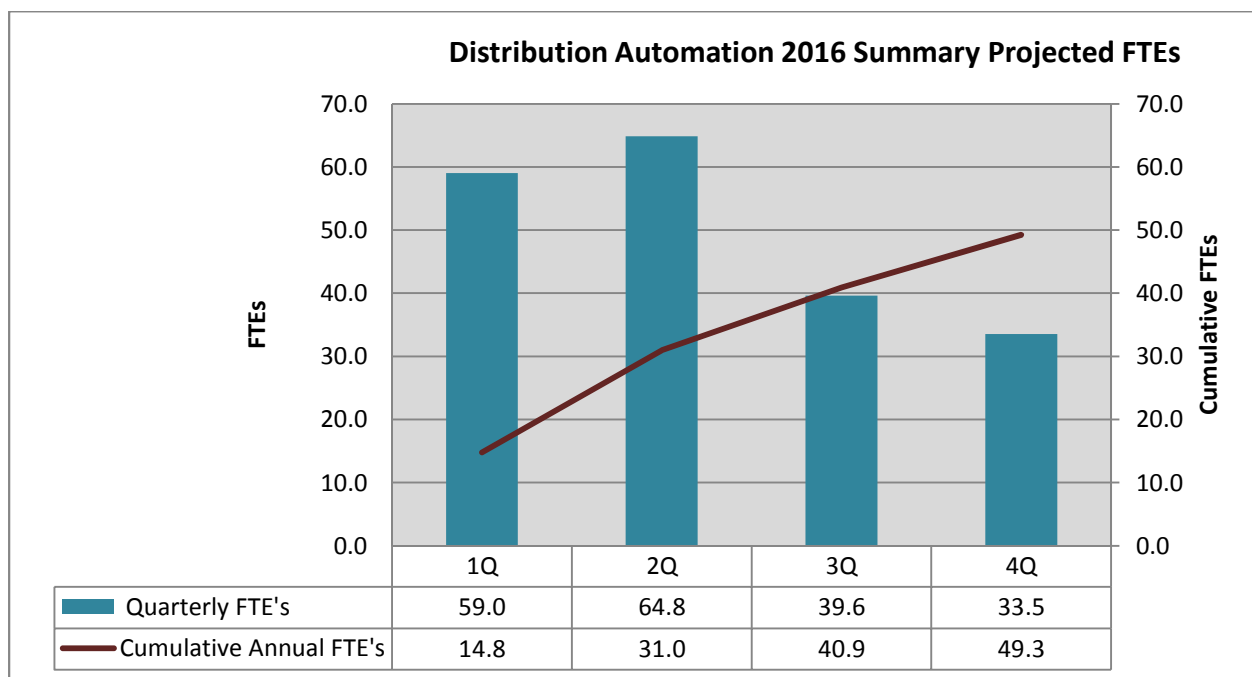
**Figure 3.I.1: Distribution Automation 2016 Summary Capital Investments**



### 3.I.2: Summary FTEs

Figure 3.I.2 represents the projected FTEs required to perform the scheduled scope of work for this summary program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 3.I.2: Distribution Automation 2016 Summary FTEs**



## **Section 4: Advanced Metering Infrastructure (AMI)**

### **4.A.1: 2016 Program Scope**

The 2016 AMI Plan objectives are:

1. Implement Remote Connect/Disconnect Functionality
2. Deploy Revenue Protection Analytics
3. Provide Non Billing Interval Data to Retail Energy Suppliers
4. Develop Peak Time Rebate (PTR) program
5. Implement basic outage event processing
6. Implement Cybersecurity plans and testing
7. Additional Web Portal Enhancements including Alert Functionality
8. Enhance and Continue Customer Communications and stakeholder communications initiatives

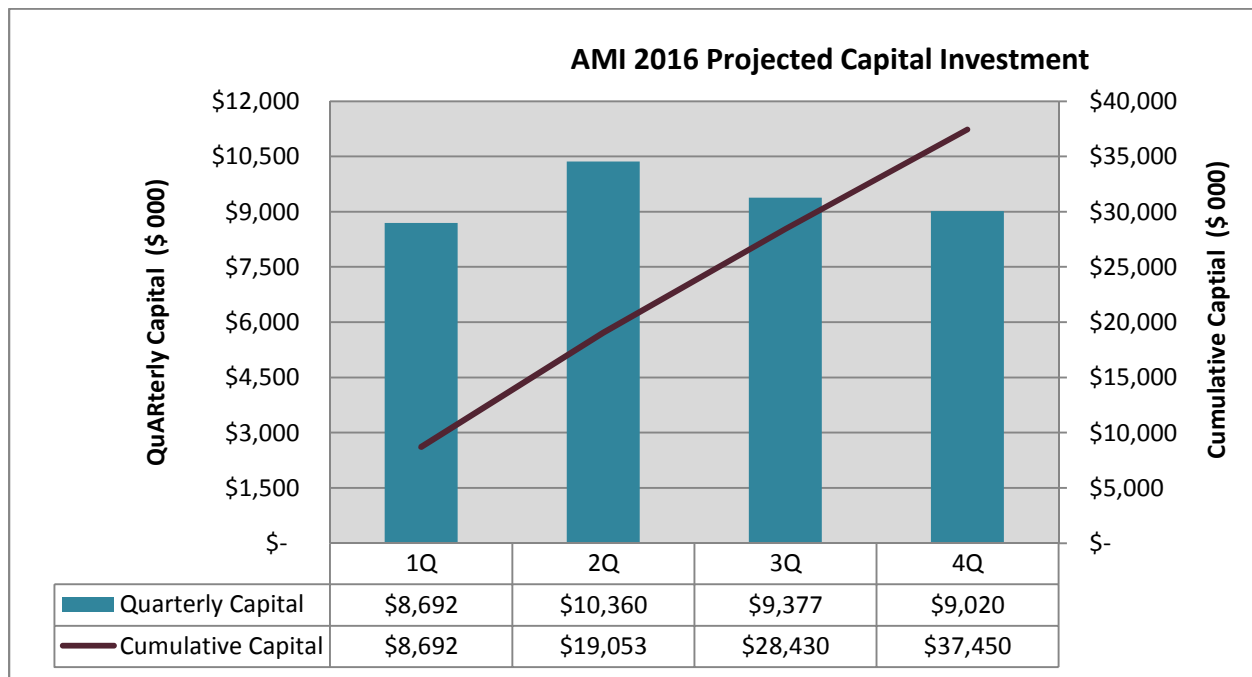
There are approximately 178,000 electric AMI meters projected to be installed in 2016.

A more detailed description can be found in the most recent AMI Plan as filed with the ICC, and in the AMI Plan update report submittal.

#### 4.A.2: 2016 Program Capital Investments

Figure 4.A.2 represents the projected 2016 capital expenditures for this program. AIC estimates the 2016 program cost to be approximately \$37.5 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

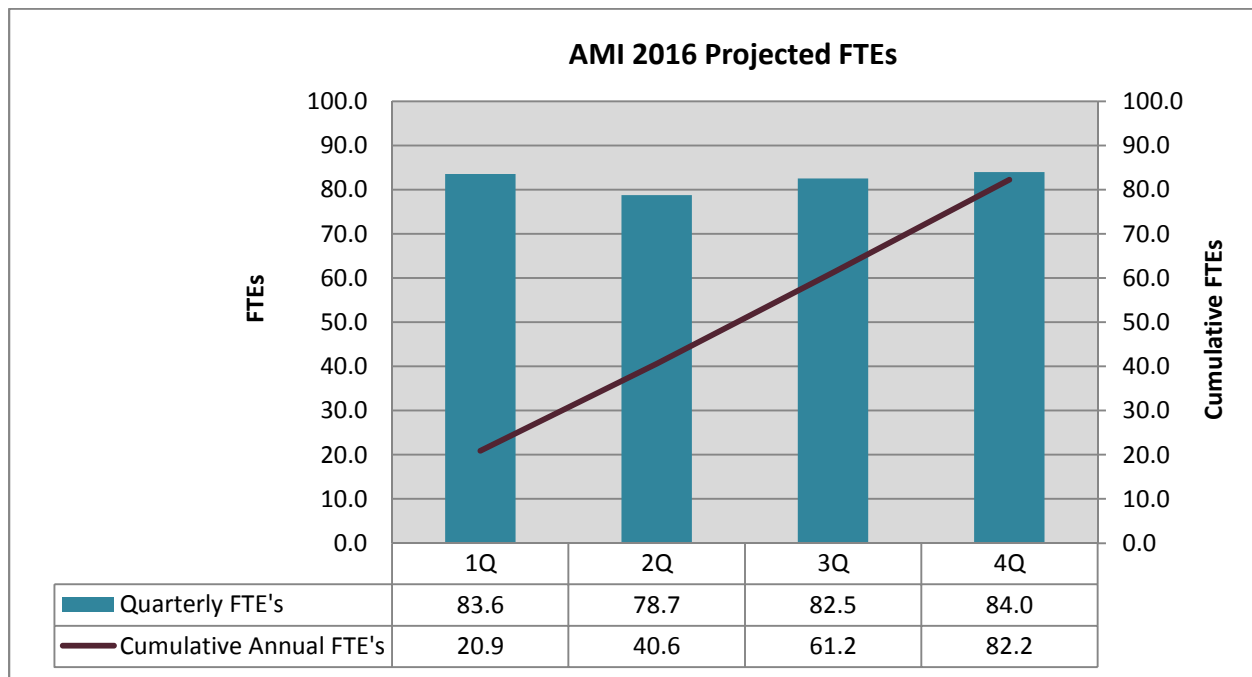
**Figure 4.A.2: AMI 2016 Capital Investments**



#### 4.A.3: 2016 Program FTEs

Figure 4.A.3 represents the projected FTEs required to perform the scheduled scope of work for the AMI program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

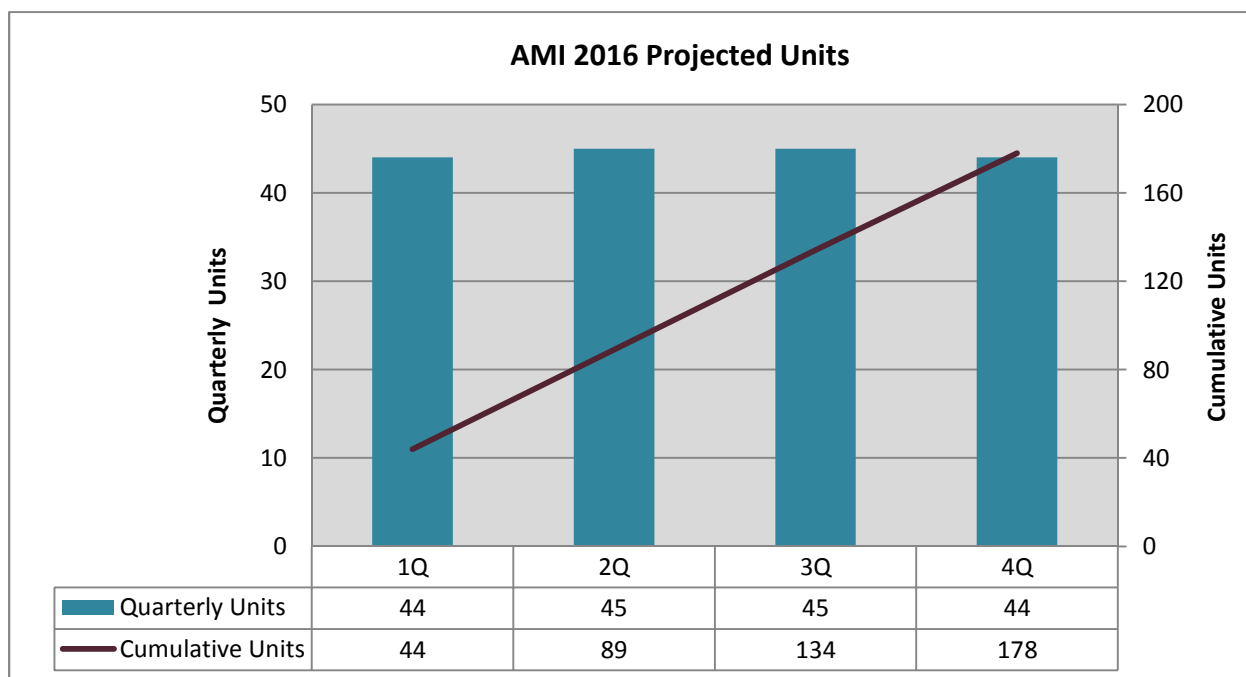
**Figure 4.A.3: AMI 2016 FTEs**



#### 4.A.4: Program Units/Schedule

Figure 4.A.4 shows the number of meters to be installed in 2016 under this program. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are electric meters (in thousands).

**Figure 4.A.4: Advanced Metering Infrastructure 2016 Units**



## **Section 5: Volt/VAR Optimization**

### **Section 5.A: High Voltage Volt/VAR Control**

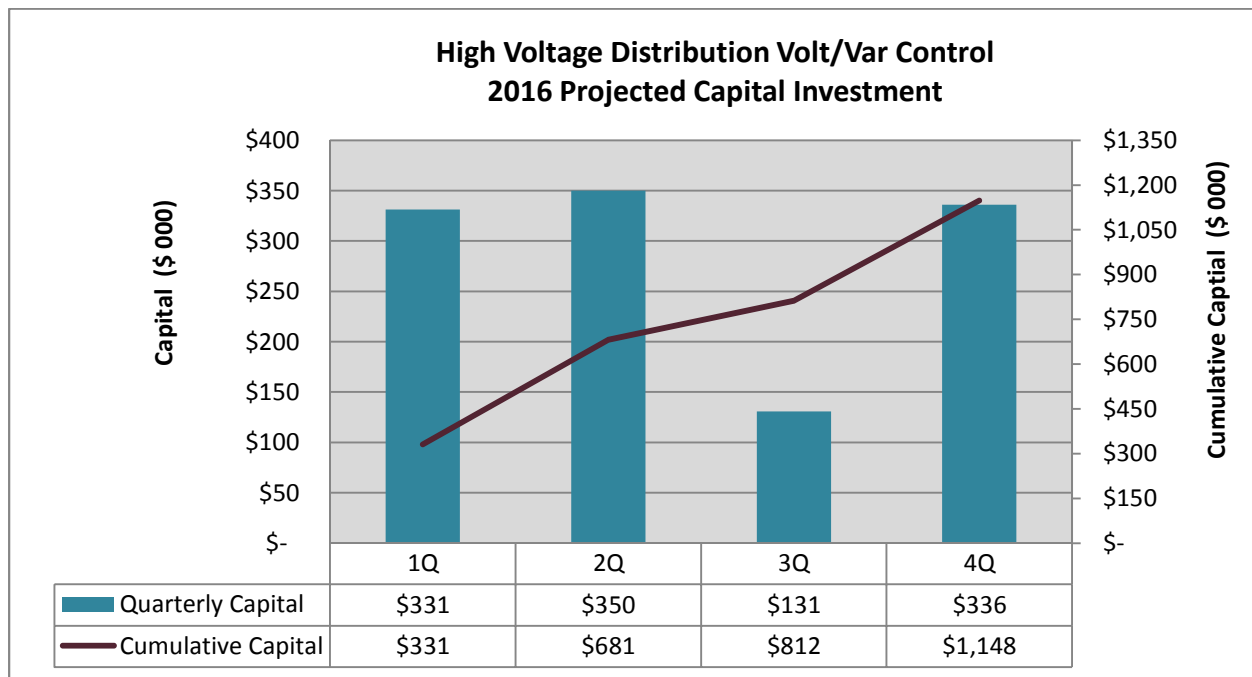
#### **5.A.1: 2016 Program Scope**

The intent of this program is to provide dynamic voltage control and optimal reactive power flow across the high voltage distribution system. Benefits include reducing energy losses due to circulating network flows and provide reduced voltage reductions to support optimal use of the system. The initial focus is on insuring all switched high voltage distribution capacitors have SCADA control and voltage indication as part of their intelligence.

## 5.A.2: 2016 Program Capital Investments

Figure 5.A.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$1.1 million in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

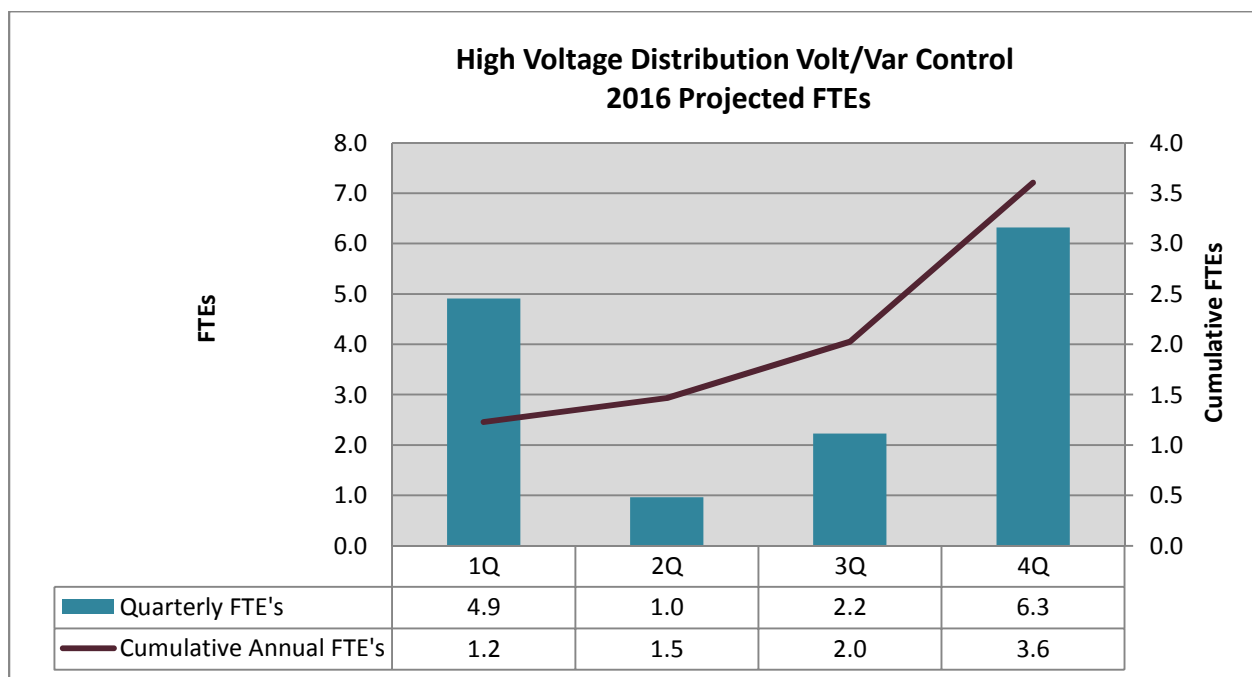
**Figure 5.A.2: High Voltage Volt/VAR Control 2016 Capital Investments**



### 5.A.3: 2016 Program FTEs

Figure 5.A.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

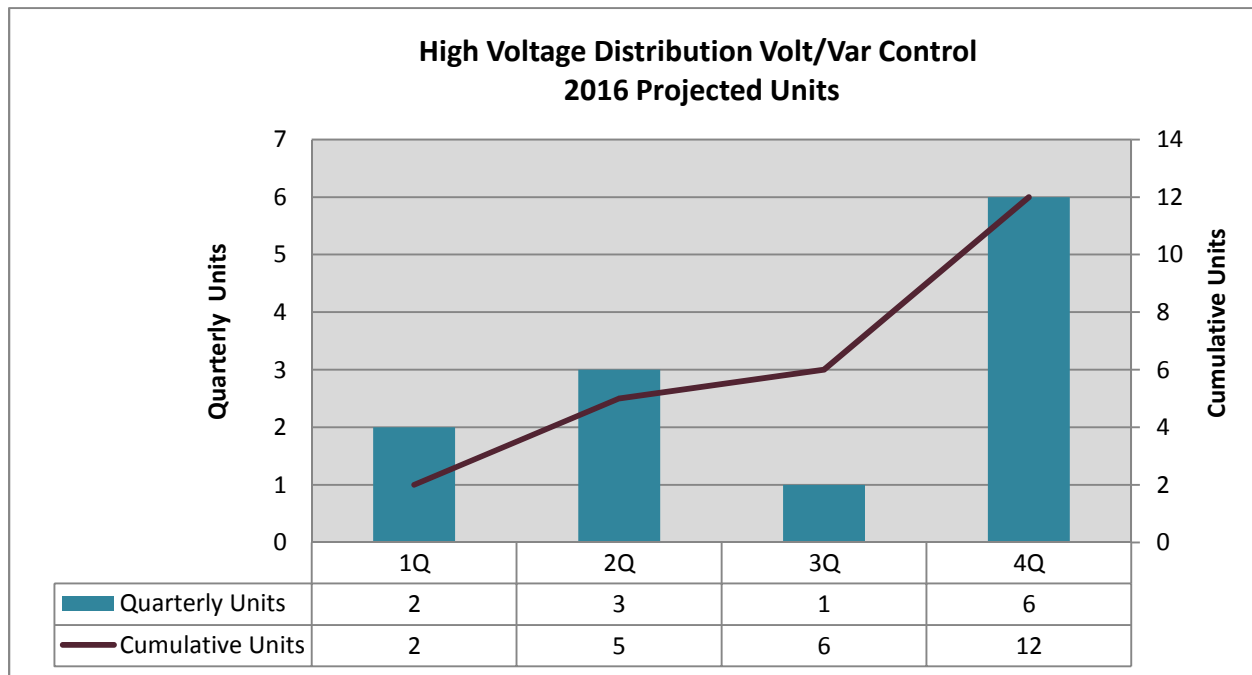
**Figure 5.A.3: High Voltage Volt/VAR Control 2016 FTEs**



#### 5.A.4: Program Units

Figure 5.A.4 shows the number of units to be completed under this program in 2016. This chart will serve as a tracking mechanism over the course of the year, and reflects the scope of work planned to be accomplished as well as the scope of work left to be performed. Estimates of cost, units of work, and schedules for that work may evolve over time. The units shown below are projects.

**Figure 5A.4: High Voltage Distribution Volt/VAR Control 2016 Units**



## **Section 5.B. Primary Distribution Volt/VAR Control**

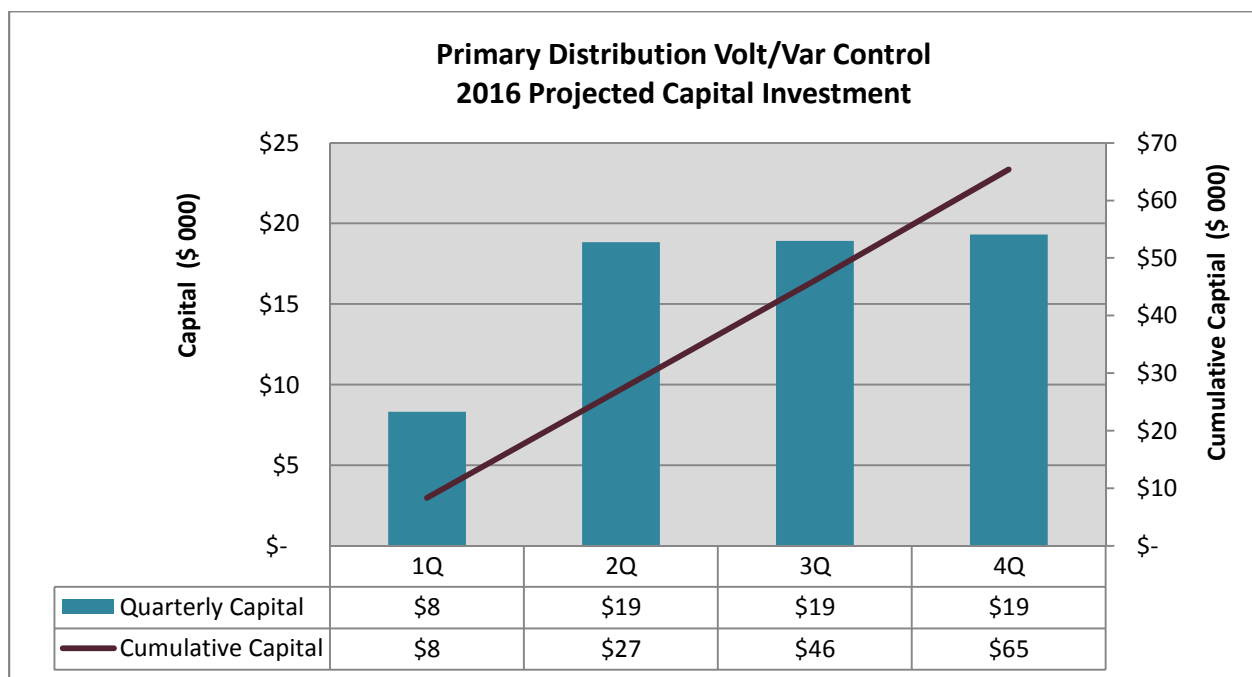
### **5.B.1: 2016 Program Scope**

This program is intended to provide dynamic voltage control and optimal reactive power flow on select primary distribution circuits. Benefits include reducing energy losses due to circulating network flows and/or provide voltage reductions to support optimal use of the system. Phase 1 (2013 engineering with 2014 construction) focused on insuring all switched low voltage distribution capacitors in the Metro-East area that were controlled by an obsolete system would interact with the new ADMS (Advanced Distribution Management System). Phase 2 (2016/2017 engineering with 2018 construction) will focus on a Volt/VAR Optimization (VVO) deployment across several AIC primary distribution level ( $<15\text{kV}$ ) circuits by controlling switching capacitor banks, voltage regulators, and possibly transformer load tap changers (LTCs) using a VVO computerized control technology solution. This may require the addition of current/voltage monitoring, SCADA at each LTC, voltage regulator, and switched capacitor bank location.

### 5.B.2: 2016 Program Capital Investments

Figure 5.B.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$65,000 in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

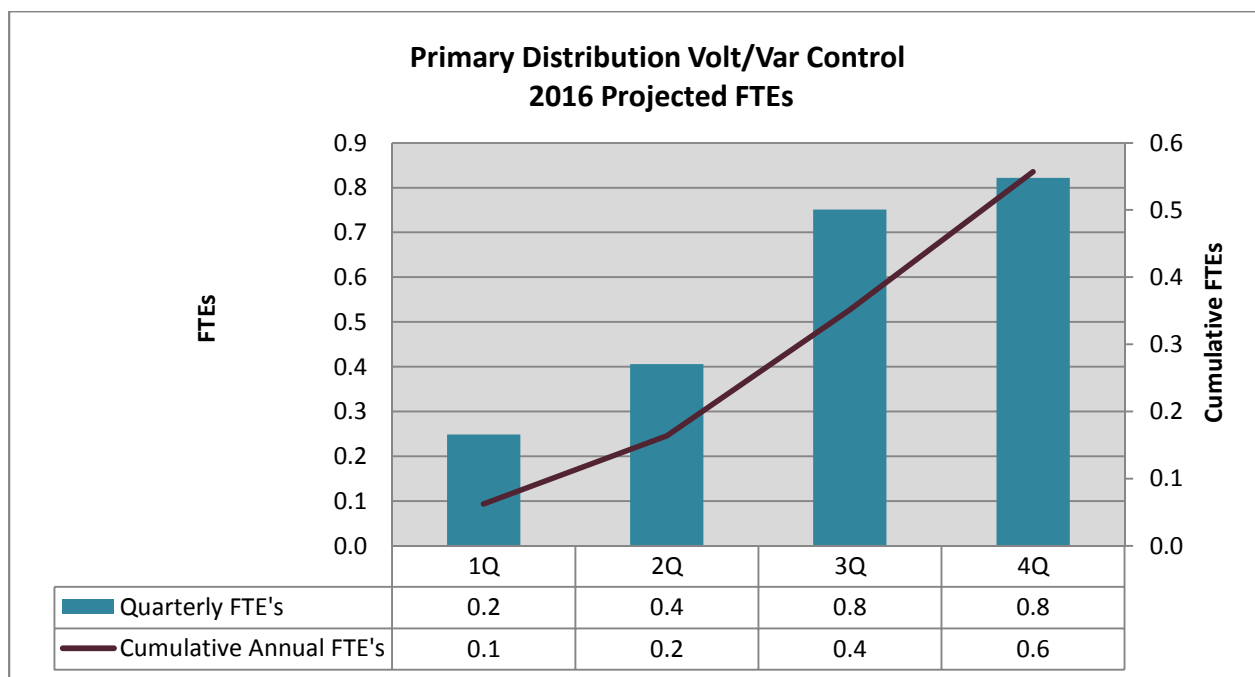
**Figure 5.B.2: Primary Distribution Volt/VAR Control 2016 Capital Investments**



### 5.B.3: 2016 Program FTEs

Figure 5.B.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 5.B.3: Primary Distribution Volt/VAR Control 2016 FTEs**



### 5.B.4: Program Units

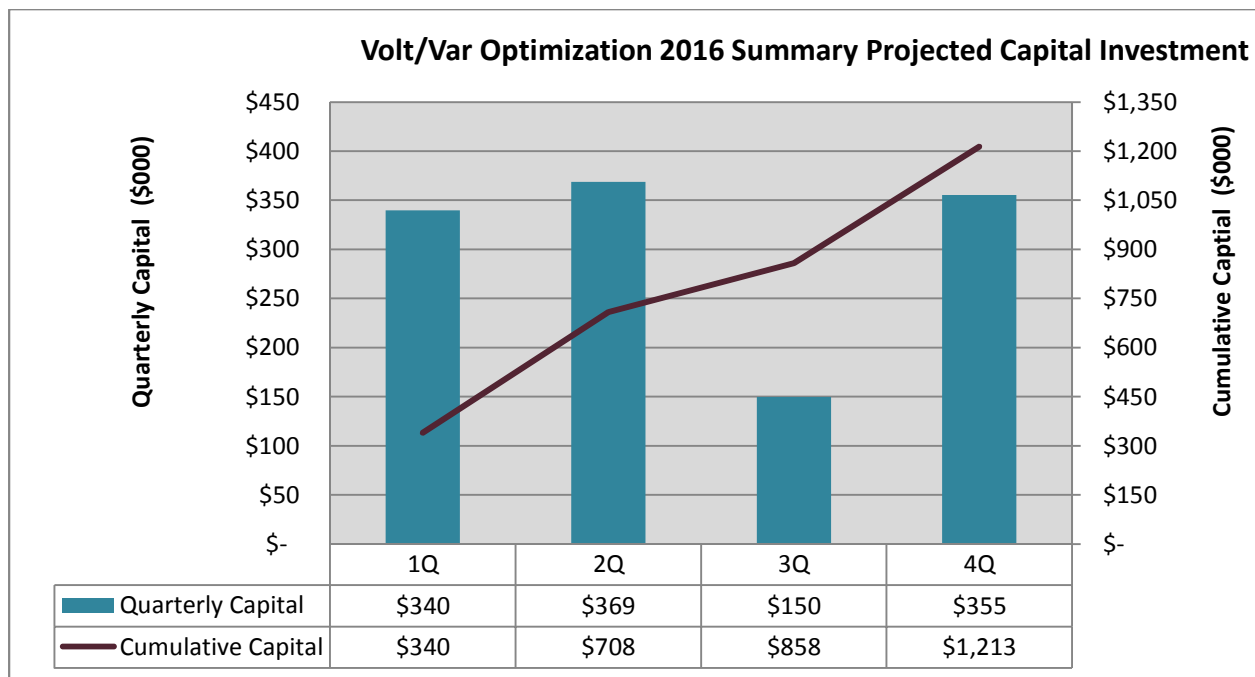
The investment in 2016 is for engineering. There are no units projected to be installed under this program in 2016.

## Section 5.C: Volt/VAR Optimization Summary

### 5.C.1: Summary Capital Investments

Figure 5.C.1 represents the projected capital expenditures for the Volt/VAR Optimization programs in 2016. AIC estimates the program cost to be \$1.2 million in capital investment, plus associated expenses over the program period. Estimates of cost, scope of work, and schedules for that work may evolve over time.

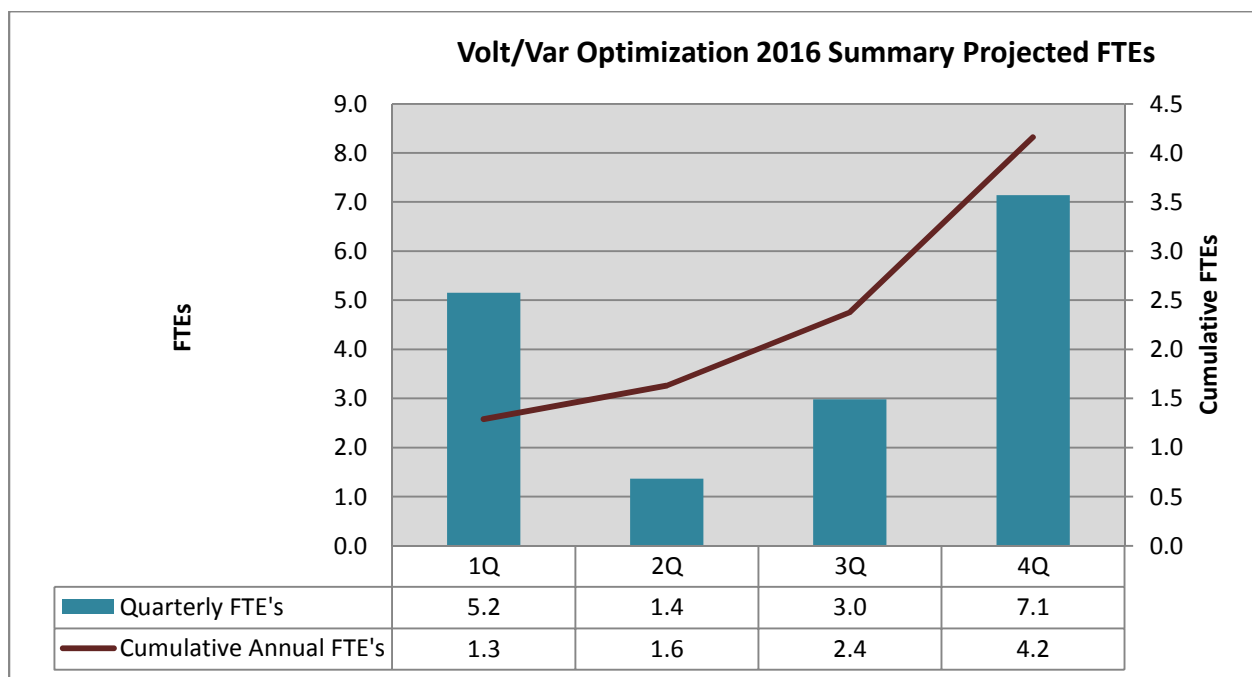
**Figure 5.C.1: Volt/VAR Optimization 2016 Summary Capital Investments**



### 5.C.2: Summary FTEs

Figure 5.C.2 represents the projected FTEs required to perform the scheduled scope of work in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support, supervision and craft.

**Figure 5.C.2: Volt/VAR Optimization 2016 Summary FTEs**



## **Section 6: Software and Technology Enhancements**

### **Section 6.A: Advanced Distribution Management System (ADMS)**

There are no planned investments in this program for 2016.

### **Section 6.B: Replace Distribution Engineering Workstation (DEW)**

#### **6.B.1: 2016 Program Scope**

The new engineering analysis software tool will replace the existing Distribution Engineering Workstation( DEW) platform. This software will allow field engineers, planners, and others to model the low voltage distribution system for power load-flow, circuit protection, distributed generation, automation, etc. General scope for 2016 includes purchasing the software and building the necessary interfaces between Ameren systems (G-tech, Byers, AMI, TLM, etc.) and the new tool. Training and rollout of the new tool started in 2015 and the workstation will be completed in 2016.

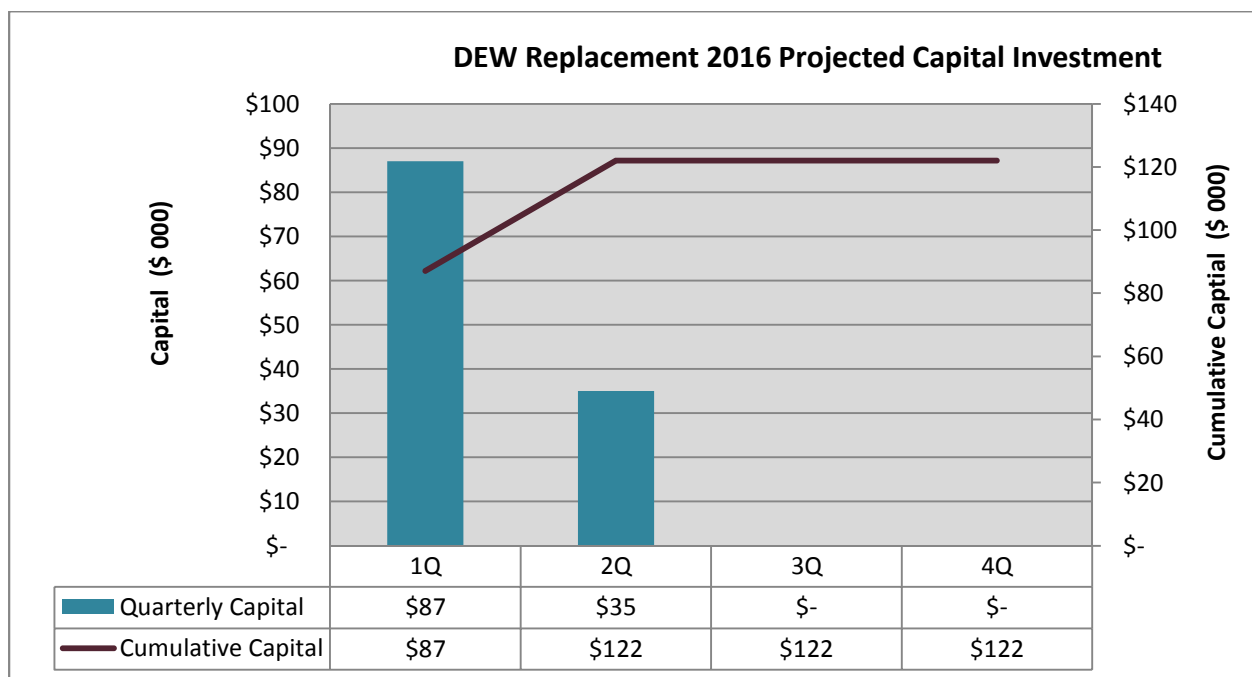
The new distribution engineering workstation tool will provide the following benefits:

1. Tool with advanced applications that can help engineers plan well into the future
2. Model distributed generation, UG meshed networks, battery storage, and distribution automation.
3. Model new technology, power load-flow, circuit protection, etc.

## 6.B.2: 2016 Program Capital Investments

Figure 6.B.2 represents the projected capital expenditures for this program in 2016. AIC estimates the 2016 program cost to be approximately \$122,000 in capital investment, plus associated expenses. Estimates of cost, units of work, and schedules for that work may evolve over time.

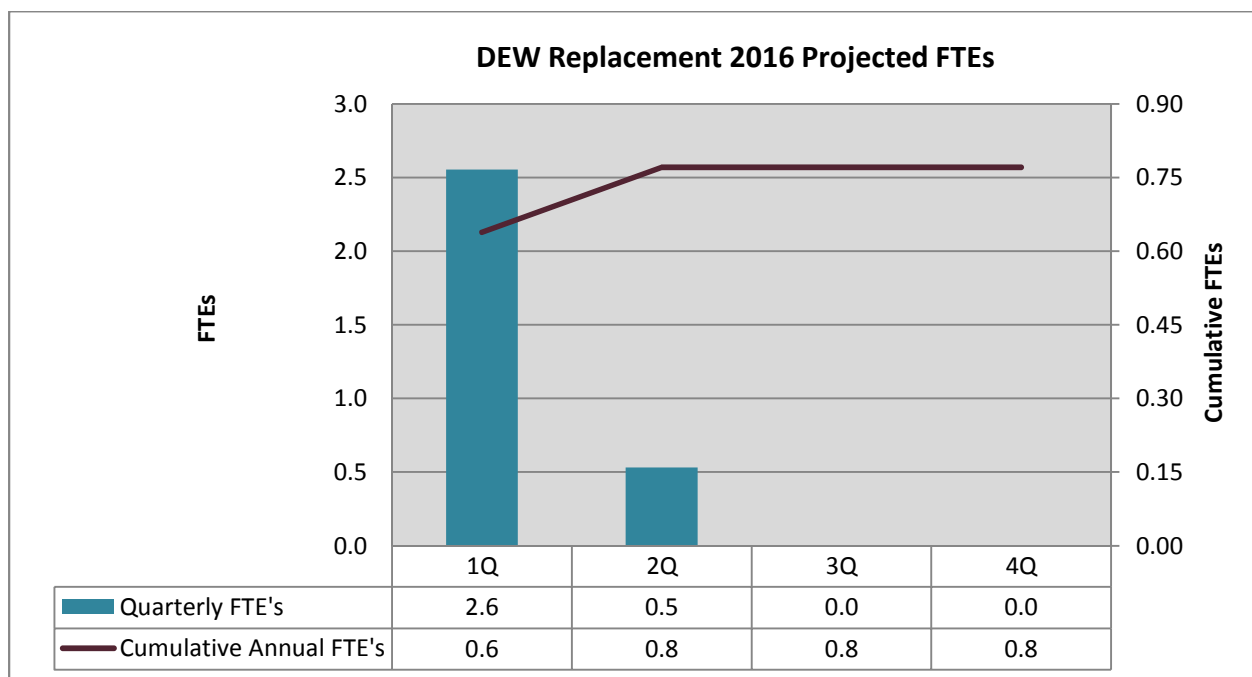
**Figure 6.B.2: DEW Replacement 2016 Projected Capital Investment**



### 6.B.3: 2016 Program FTEs

Figure 6.B.3 represents the projected FTEs required to perform the scheduled scope of work for this program in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, supervision and craft.

**Figure 6.B.3: DEW Replacement 2016 Projected FTEs**



### 5.B.4: Program Units

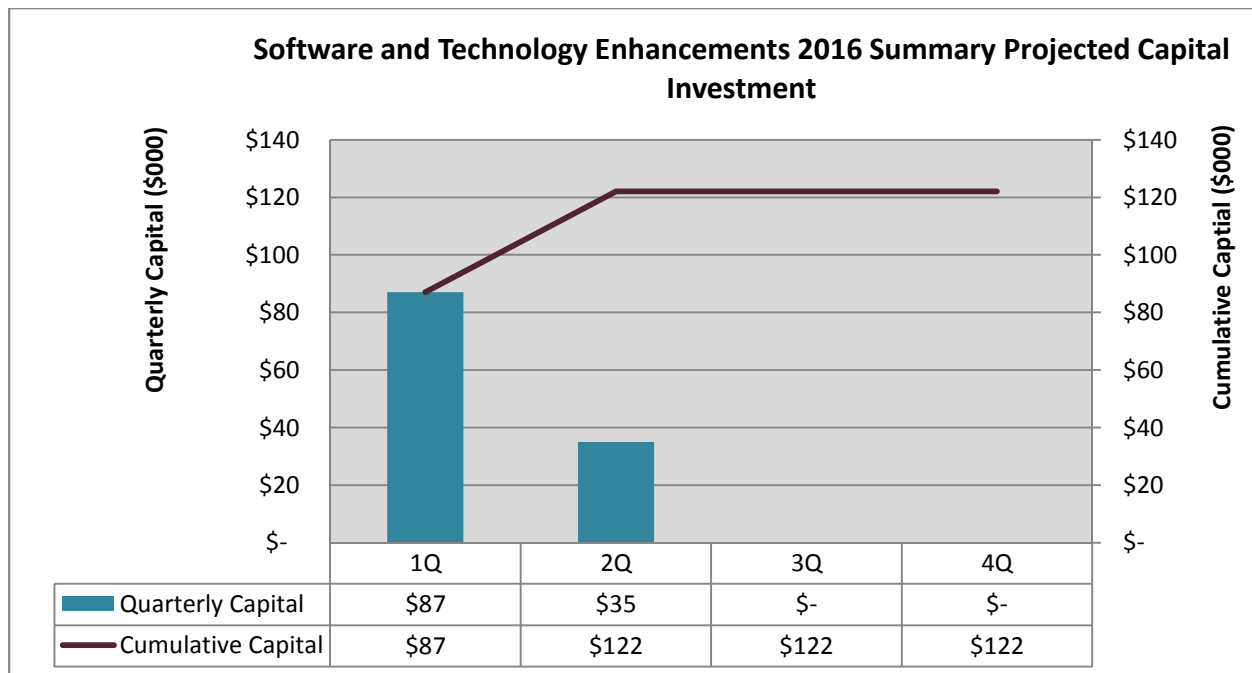
There is only one project currently associated with this program.

## Section 6.C: Software and Technology Enhancements Summary

### 6.C.1: Summary Capital Investments

Figure 6.C.1 represents the projected capital investments for the Software and Technology Enhancements programs. AIC estimates the program cost to be \$122,000 in capital investment, plus associated expenses in 2016. Estimates of cost, scope of work, and schedules for that work may evolve over time.

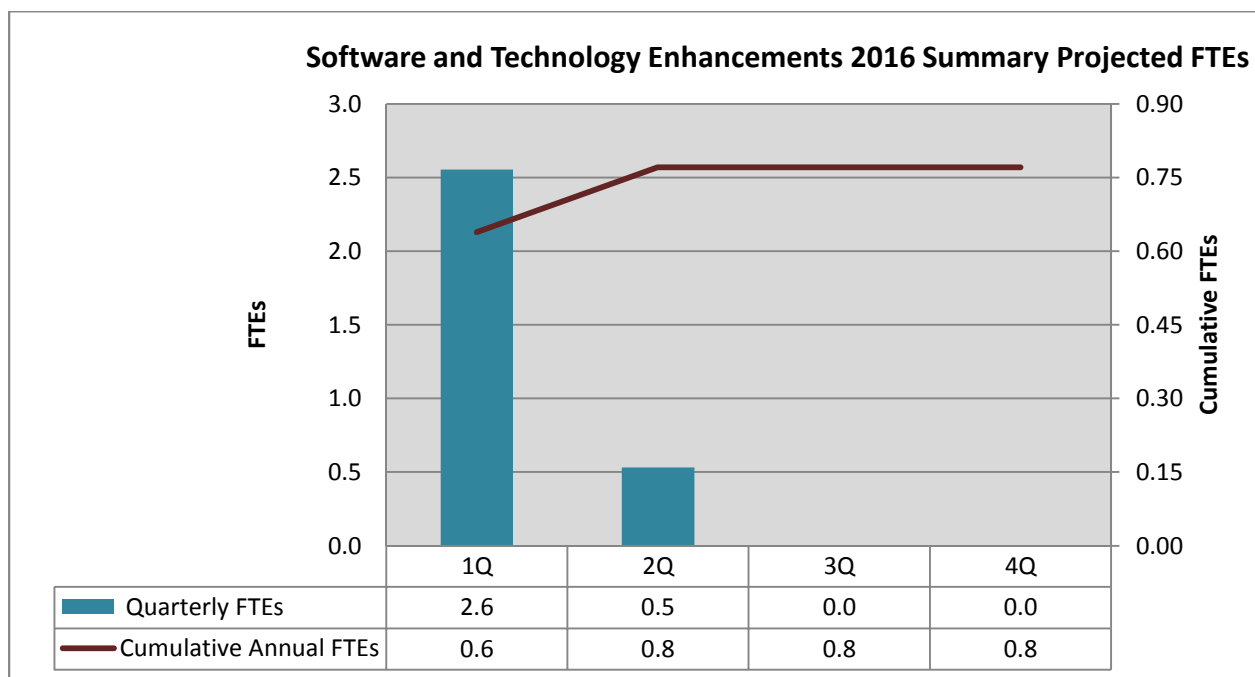
**Figure 6.C.1: Software and Technology Enhancements 2016 Summary Capital Investments**



## 6.C.2: Program FTEs

Figure 6.C.2 represents the projected FTEs required to perform the scheduled scope of work in 2016. Job classifications may include, but are not limited to, engineers, technicians, work planners, finance support, safety support, scheduling support, legal support, supervision, and craft.

**Figure 6.C.2: Software and Technology Enhancements 2016 Summary FTEs**



## **Appendix A: Summary-Level Plan Information**

As required by Section 16-108 (b), the total projected \$106.9 million of cumulative capital investment under the 2016 Plan will be incremental to AIC's total annual capital investment program, as defined in Section 16-108.5(b). That is, over the course of 2016, AIC will invest at least a projected cumulative total of \$106.9 million more capital than a capital investment program that invested at an annual rate defined by AIC's average capital spend for calendar years 2008, 2009, and 2010, as reported in AIC's applicable Federal Energy Regulatory Commission ("FERC") Form 1s.

Figure 1 represents the projected total capital investment associated with the 2016 Plan.

**Figure 1: 2016 Plan Capital Investments**

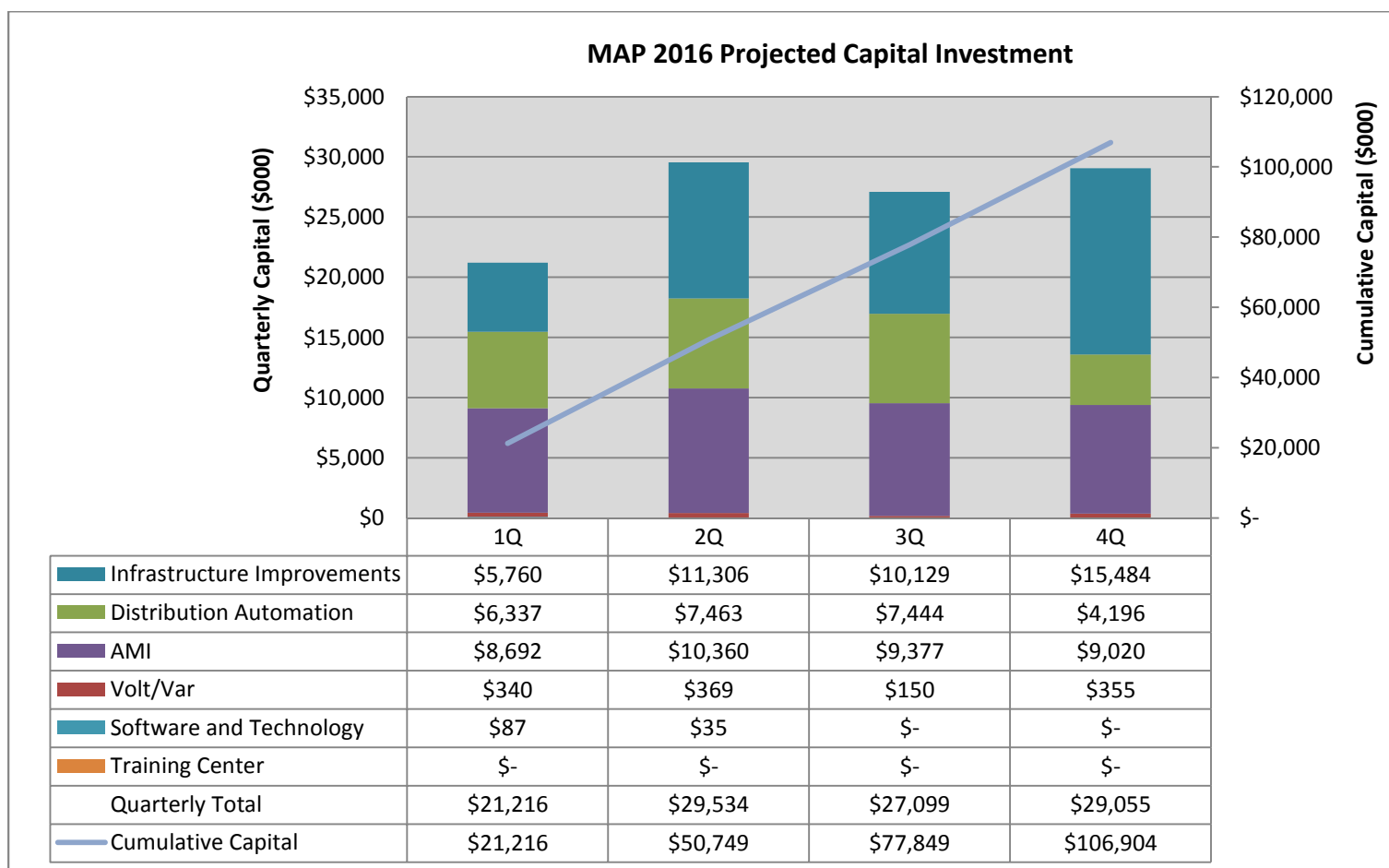


Table 2 represents the projected total number of units to be installed within the 2016 Plan.

**Table 2: 2016 Plan Units**

<b>Infrastructure Improvements</b>	<b>Units</b>	<b>2016</b>
Replace Primary Distribution Substation Reclosers	Reclosers	32
Substation Animal Protection	Substations	10
Bulk Substation Improvements	Projects	3
Distribution Transformer Reserve	Projects	2
Tie Line Capacity - Line 6973	Project	0
Substation Low side Auto Transfer	Projects	2
High Voltage Distribution Pole Reinforcement	Poles	96
Replace High Voltage Distribution Breakers	Breakers	3
Spacer Cable Program	Miles	3.9
Rebuild Primary Distribution Lines	Miles	9.2
Primary Distribution Lines Capacity Additions	Projects	4
Bulk Transformer Outage Mitigation	Projects	1
Rebuild High Voltage Distribution Lines	Miles	15.8
Expand Bulk Supply Substations	Projects	2
Underground Primary Distribution Cable	Miles	3.3
System Tie Primary Distribution	Projects	5
CERT Remediation	Projects	0
<b>Distribution Automation</b>		
Primary Distribution Automation	Projects	59
Communication Infrastructure	None	0
High Voltage Distribution Relaying	Terminals	21
Distribution Substation Metering	Projects	15
High Voltage Distribution Automation	Projects	19
Underground Network Modernization	Protector	26
Test Bed	Projects	0
Distributed Energy Resource Integration	Projects	1
<b>Advanced Metering Infrastructure</b>		
AMI Summary	Meters (000)	178
<b>Volt/Var Optimization</b>		
High Voltage Distribution Volt / Var Control	Projects	12
Primary Distribution Volt/Var Control	Projects	0
<b>Software and Technology Enhancements</b>		
ADMS	Phases	0
Replacement of DEW	Project	1
<b>Training Facilities</b>		
Training Facilities	Locations	0

Figure 3 represents the total projected FTEs to execute the scheduled scope of work associated with the 2016 Plan. The projected FTEs shown in Figure 3 do not include any induced or indirect FTEs.

**Figure 3: 2016 Plan FTEs**

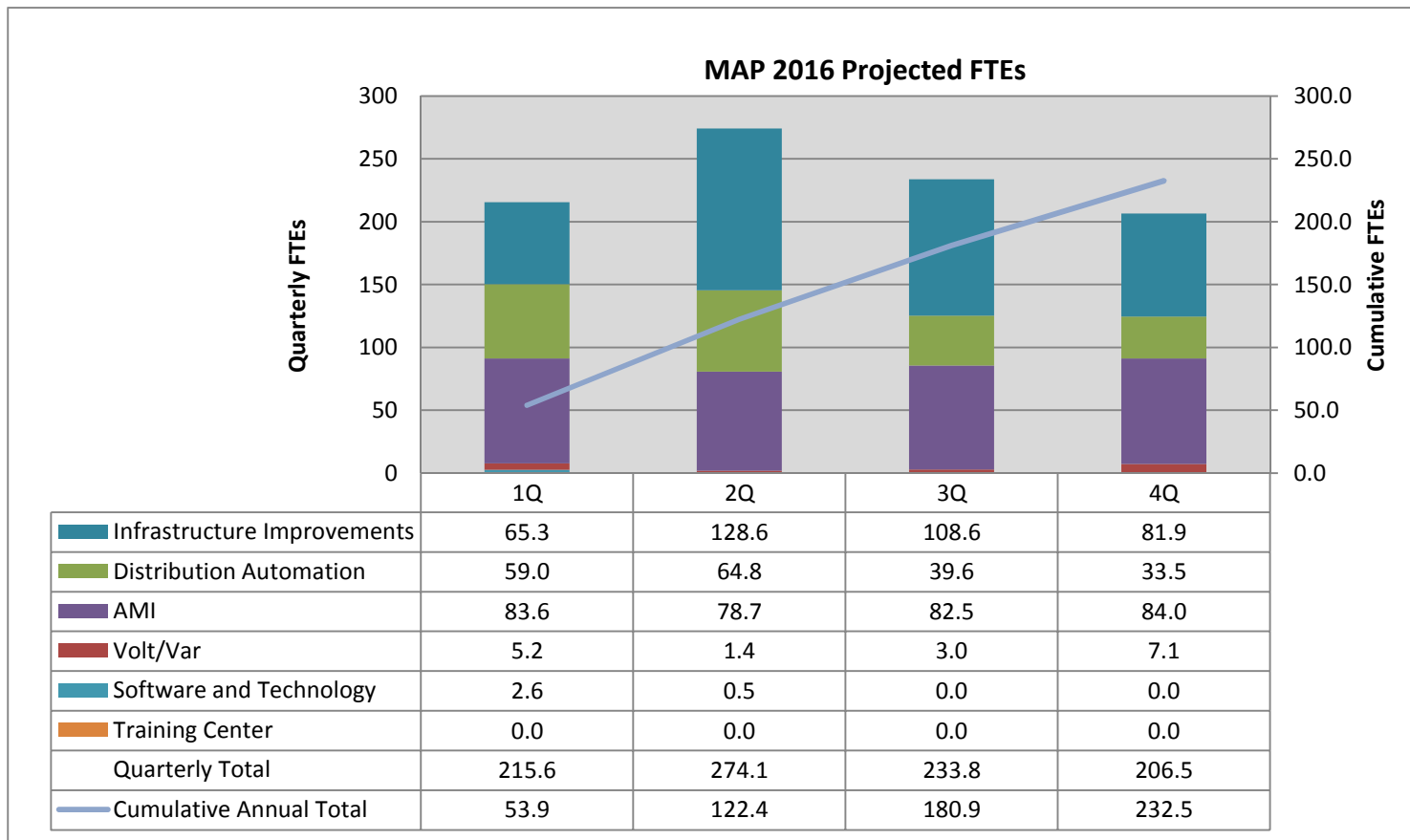


Table 4: Projected Plan projects projected to be placed in service in 2016.

Program	Location	Description
Bulk Substation Improvements	Canton	Add 34.5 kV tie breaker to Canton South Substation
Bulk Substation Improvements	Canton	Rearrange line position #258 and #261 at Canton South Substation for 34.5 kV tie breaker project.
Bulk Substation Improvements	Hoopeston	Hoopeston West: Add 69 kV Tie Breaker
Bulk Transformer Outage Mitigation	Wedron	L3359 - Reconductor & relocated line, between pole #132 near Wedron Silica #2 Sub and the Wedron REA Sub.
Communication Infrastructure	Illinois	SGCN Gateway Cabinets 2016
DEW Replacement	Illinois	DEW Replacement
Distributed Energy Resource Integration	Champaign	Install distributed energy resources (DER) plus the necessary transformer, switchgear, conductor, and control technology.
Distribution Substation Metering	Danville	DV Liberty Lane - Add Distribution Metering
Distribution Substation Metering	Decatur	Decatur Mound Rd - Add Distribution Metering
Distribution Substation Metering	Danville	DV Franklin St. - Add Distribution Metering
Distribution Substation Metering	Litchfield	Litchfield - Add Distribution Metering
Distribution Substation Metering	Centralia	Centralia - Add Distribution Metering
Distribution Substation Metering	Hillsboro	Hillsboro - Add Distribution Metering
Distribution Substation Metering	Galesburg	GB Fremont Rd - Add Distribution Metering
Distribution Substation Metering	Decatur	Decatur Rt 48 South - Add Distribution Metering
Distribution Substation Metering	Mt. Vernon	Mt. Vernon Gaskin St - Add Distribution Metering
Distribution Substation Metering	Nashville	Nashville - Add Distribution Metering
Distribution Substation Metering	Taylorville	Taylorville, E - Add Distribution Metering
Distribution Substation Metering	Monticello	Monticello - Add Distribution Metering
Distribution Substation Metering	Alton	Fosterburg - Add Distribution Metering
Distribution Substation Metering	Oquawka	Oquawka Rural - Add Distribution Metering
Distribution Substation Metering	Normal	Normal Route 66 - Add Distribution Metering
Distribution Substation Transformer Reserve	Pekin	Koch Substation - Line work where transfer at least one feeder from Transf. #1 to Transf. #2.
Distribution Substation Transformer Reserve	Pekin	Koch Substation - Install second transformer and construct a new feeder.
Expand Bulk Supply Substations	Quincy	Upgrade the 138/34.5kV Bulk Supply Transformer at Quincy 3rd & Jefferson with LTC
Expand Bulk Supply Substations	Roodhouse	Upgrade the 138/69kV Bulk Supply Transformer at Roodhouse West with a 112 MVA transformer with LTC
High Voltage Distribution Automation	Joppa	Joppa-Metropolis 69kV automate loop ckt S56-730 and S59-737 (Metropolis Loop phase 2)
High Voltage Distribution Automation	Danville	Add MOs, ATO, and SCADA to Danville Lynch Rd 69kV switches 2079 and 2080
High Voltage Distribution Automation	Georgetown	Replace ATO switches and controls at Georgetown Indianola Rd Substation switches 2072 and 2077
High Voltage Distribution Automation	Waltonville/Tamaroa	Line 6662 Switches 2708, 2709, 2643 and a new switch -Install SCADA control
High Voltage Distribution Automation	Granite City	Line 3314 A. S. at Switch 3229 and a new Switch North of the 3314C tap
High Voltage Distribution Automation	Bunker Hill	Line 3315 add two A.S. either side of the A tap to Sawyerville Switching Station and L3319
High Voltage Distribution Automation	Bunker Hill	Line 3319 A.S. on line west of Bunker Hill Substation tap
High Voltage Distribution Automation	Pocahontas	Add A.S. to Line 3348 near Pocahontas Substation
High Voltage Distribution Automation	Bloomington	Line 6612 adding load breaking capabilities to switches 1727, 1703, and 1706.
High Voltage Distribution Automation	Bloomington	L3435 A. S. north of 3435B tap near Normal Park Side REA

Program	Location	Description
High Voltage Distribution Automation	Springfield	Springfield Area - Replace Switch 6564-1 with SCADA Controlled Device
High Voltage Distribution Automation	Springfield	Springfield Area - Replace Switch 6163-1 with SCADA Controlled Device
High Voltage Distribution Automation	Midland City	Install ATO on Van Cleave Tap
High Voltage Distribution Automation	Hammond	Add two A.S. to Line 3437 at the Hammond Substation Tap
High Voltage Distribution Automation	Multiple	Purchase and install SCADA FCI (Faulted Circuit Indicators) for installation on 50 Sub-transmission Radial Locations
High Voltage Distribution Automation	Marion	Marion Court Street Install ATO with SCADA - Lines 227 & 292
High Voltage Distribution Automation	Carbondale	Carbondale Wall Street Sub Install ATO with SCADA
High Voltage Distribution Automation	Bloomington	Line 6612 adding load breaking capabilities to switch 1707.
High Voltage Distribution Automation	Hopedale	Install 69kV recloser on 6973 as pilot project.
High Voltage Distribution Pole Reinforcement	Macomb	North Frederick - Rushville (U53-737) TS201 w/3-336.4ACSR 69kV& 3-4CWC 12kV conductor, class 3 poles
High Voltage Distribution Pole Reinforcement	Versailles	Versailles to E Mt. Sterling
High Voltage Distribution Pole Reinforcement	Paxton	Gilman to Clifton
High Voltage Distribution Relaying	Bartonville	Bartonville - Line 6939/6989
High Voltage Distribution Relaying	Clinton	Wallace - Line 6989
High Voltage Distribution Relaying	Collinsville	East Collinsville - Line 3402/3309
High Voltage Distribution Relaying	Belleville	East Belleville - Line 3477/3337
High Voltage Distribution Relaying	East Peoria	RS Wallace - Line 6929/6923
High Voltage Distribution Relaying	Peoria	Northwest - Line 6916/6936/6937
High Voltage Distribution Relaying	East Peoria	Fargo - Line 6934/6913/6937
High Voltage Distribution Relaying	Chillicothe	Hallock - Line 6934
High Voltage Distribution Relaying	Steeleville	Steeleville - Line 3343
High Voltage Distribution Relaying	Peoria	New York - Line 6936
High Voltage Distribution Relaying	Aviston	Aviston - Line 6634
High Voltage Distribution Relaying	Farmington	Linberg - Line 6937
High Voltage Distribution Relaying	Peoria	Cornell - Line 6961
High Voltage Volt/VAR Control	Forest City	Add SCADA indication and control; install capacitor switcher at Forest City Substation
High Voltage Volt/VAR Control	Donovan	Add SCADA indication and control at Donovan Substation
High Voltage Volt/VAR Control	Bloomington	Add SCADA indication and control at Bloomington Empire St. Substation. Change current switch C341 with a capacitor switcher
High Voltage Volt/VAR Control	Carbondale	Add SCADA indication and control at Carbondale SIU Substation
High Voltage Volt/VAR Control	Nashville	Add SCADA indication and control at Nashville Substation
High Voltage Volt/VAR Control	Dieterich	Add SCADA indication and control at Dieterich Substation
High Voltage Volt/VAR Control	Chenoa	Add SCADA indication and control at Chenoa Substation
High Voltage Volt/VAR Control	Danville	Add SCADA indication and control at Danville Lakeview Substation
High Voltage Volt/VAR Control	Clay City	Add SCADA indication and control at Clay City Wayne White Coop Substation
High Voltage Volt/VAR Control	Mineral	Add SCADA indication and control on Line 3383
High Voltage Volt/VAR Control	Colchester	Add SCADA indication and control at Colchester Substation
High Voltage Volt/VAR Control	Albion	Add SCADA indication and control at Albion Wayne White Coop Substation
Primary Distribution Automation	Peoria	Northwest replace 3ph breaker on feeder 1 with Viper and Intellinode

Program	Location	Description
Primary Distribution Automation	East Peoria	Fondulac replace 3phase recloser with Viper and Intellinode on Feeder 1
Primary Distribution Automation	Watseka	Add DA to Watseka E Z06-537 and Watseka Z05-550
Primary Distribution Automation	Watseka	Add DA to Watseka E Z06-538 to Watseka Z05-549
Primary Distribution Automation	Herrin	Add DA to Herrin ckt 575 to Herrin SW ckt 549
Primary Distribution Automation	O' Fallon	Add DA to O'Fallon ckt 242 to Troy Rd ckt 310
Primary Distribution Automation	O' Fallon	Add DA to O'Fallon ckt 245 to O'Fallon Seven Hills ckt 256
Primary Distribution Automation	Belleville	Install DA on Tamarack Ckt 303, Tamarack Ckt 304, Shiloh Valley Ckt 249, and O'Fallon Porter Rd Ckt 294
Primary Distribution Automation	Quincy	Add DA to Quincy 28th/Adams ckt 533 to Quincy 34th/Harrison ckt 504
Primary Distribution Automation	Bloomington	Add DA to Bloomington Empire ckt 176 and interface to existing DA scheme at Bloomington GE Rd ckt 186 and Empire ckt 178
Primary Distribution Automation	Decatur	Add DA to Decatur Mound 126 to Decatur Greenswitch 134
Primary Distribution Automation	Decatur	Add DA to Decatur Rt48 ckt 146 to Decatur Fairview ckt.130
Primary Distribution Automation	Springfield	Add DA to McGrath Fdr 4 and Kickapoo Fdr 2
Primary Distribution Automation	La Salle	Add DA to Ottawa ckt 366 to N Ottawa ckt 390
Primary Distribution Automation	Peoria	Add DA to Farmdale Fdr 1 to E. Peoria Fdr 1
Primary Distribution Automation	Peoria	Add DA to Flint Fdr1 to Southwood Fdr 2
Primary Distribution Automation	Peoria	Add DA to Grandview Fdr4 and Hines Fdr 2
Primary Distribution Automation	Peoria	Add DA to Meyer Fdr 13 and Bartonville Fdr 21
Primary Distribution Automation	Peoria	Add DA to Radnor Fdr3 to Northmoor Fdr 3
Primary Distribution Automation	Peoria	Add DA to Sheridan Fdr 4 to E Peoria Fdr 2
Primary Distribution Automation	Peoria	Add DA to Elm Grove Fdr 1 to Park Fdr 3
Primary Distribution Automation	Hillsboro	Add DA to N. Staunton ckt 845 and Staunton Spring ckt 871
Primary Distribution Automation	Bethalto	Add DA to Bethalto 357 and interface to existing DA scheme on Rosewood Hts ckt 352 and Bethalto 377
Primary Distribution Automation	Collinsville	Add DA to Collinsville ckt 386 and ckt 389 and interface to existing DA scheme on Cloverleaf 389 and Collinsville Reese Dr 401
Primary Distribution Automation	Collinsville	Add DA to Collinsville Cloverleaf 422 and connect to existing DA scheme at Collinsville Reese ckt 401 and Collinsville 385
Primary Distribution Automation	Champaign	Add DA to Champaign SW Campus 351 to Champaign Oak St 542
Primary Distribution Automation	Champaign	Add DA to Monticello ckt 305 306 and Monticello Rt 105 ckt 341
Primary Distribution Automation	Mattoon	Add DA to Mattoon NW ckt 556 and Mattoon W ckt 559
Primary Distribution Automation	Robinson	Add DA to Robinson W fdr 557 to Robinson E fdr 527
Primary Distribution Automation	Belleville	Add DA to Belleville 44th ckt 139 and Belleville Mariknoll ckt 121
Primary Distribution Automation	Belleville	Add DA to Belleville 74th ckt 161 and Centreville ckt 207
Primary Distribution Automation	Belleville	Add DA to E Bellville Ckt 133 to Belleville Belle Valley ckt 165
Primary Distribution Automation	Belleville	Add DA to O'Fallon Porter Rd ckt 423 and Belleville Pontiac 238
Primary Distribution Automation	Harrisburg	Add DA to New Haven Oil Field fdr 559 to Norris City fdr 504
Primary Distribution Automation	Belleville	Add DA to Belleville C St Ckt 105 to East Belleville Ckt 135
Primary Distribution Automation	Collinsville	Replace existing recloser 385-3 outside Collinsville substation with an IntelliRupter and interface to existing DA scheme on ckt 385 to Collinsville Reese Dr ckt 401
Primary Distribution Automation	O' Fallon	Add DA to O'Fallon ckt 244 to O'Fallon Porter Rd ckt 294
Primary Distribution Automation	Decatur	Replace Forsyth substation breaker 161-0 with recloser, SCADA, and install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Mahomet	Replace Mahomet substation breaker 107-0 with recloser, SCADA, and install Intellinode to interface to existing DA scheme

Program	Location	Description
Primary Distribution Automation	Edwardsville	Replace S. Edwardsville substation breaker 409-0 with recloser, SCADA, and install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Decatur	Replace Decatur Brush College substation breaker 117 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Collinsville	Replace Collinsville Cloverleaf substation breaker 389 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Galesburg	Replace Galesburg N. Seminary substation breaker 112-0 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Danville	Replace Tilton Ross Ln substation breaker 165-0 with recloser, SCADA, and install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Urbana	Replace Urbana Five Pts substation breaker 951 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Champaign	Replace N. Champaign substation breaker 131 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Decatur	Replace Decatur Walnut Grove substation breaker 139 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Bloomington	Replace Bloomington Empire substation breaker 176 with recloser, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Peoria	Replace Kice sub breaker Fdr3 with recloser and SCADA/Intellinode and add Intellinode to Fdr 3 with SCADA to interface to existing DA scheme
Primary Distribution Automation	Peoria	Replace Koch substation breakers on Fdr 2 and Fdr4 with reclosers, add SCADA, and Intellnodes to interface to existing DA schemes
Primary Distribution Automation	Peoria	Add Intellinode to existing switchgear breaker on Fdr 1 and 2 at Court substation to interface with existing DA scheme
Primary Distribution Automation	Peoria	Add Intellinode to existing switchgear breaker on Fdr 2 and 3 at Jefferson substation to interface with existing DA scheme
Primary Distribution Automation	Jacksonville	Install Intellinode at Jacksonville Anna Viper recloser 101 and interface to existing DA scheme on the circuit.
Primary Distribution Automation	Champaign	Replace Champaign Leverett Rd sub breakers 361 & 366 with reclosers, SCADA, and Install Intellinode to interface to existing DA scheme
Primary Distribution Automation	Peoria	Add Intellinode to existing Viper Recloser on Fdr1 at Kice substation to interface with existing DA scheme
Primary Distribution Automation	Normal	Add Intellinode to existing Viper Recloser 411-0 at Normal White Oak substation to interface with existing DA scheme
Primary Distribution Automation	Peoria	Add Intellinode to existing switchgear breaker on Fdr 2 at Alta substation to interface with existing DA scheme
Primary Distribution Automation	O' Fallon	Add Intellinode to existing Viper Recloser 312-0 at O'Fallon Troy Road substation to interface with existing DA scheme
Primary Distribution Automation	Peoria	Add Intellinode to existing switchgear breaker on Fdr 5 at Pioneer substation to interface with existing DA scheme
Primary Distribution Lines Capacity Additions	Bethalto	Reconductor 4/0 with 556 along Fillmore St. in Bethalto.
Primary Distribution Lines Capacity Additions	East Alton	Reconductor 4/0 with 556 along Airwood Dr in East Alton
Primary Distribution Lines Capacity Additions	Bethalto	Reconductor 4/0 with 556 along Old Bethalto Road in Bethalto
Primary Distribution Lines Capacity Additions	Champaign	Overbuild circuit along Prospect from Olympian Dr to Interstate Dr to relieve circuit 366
Rebuild High Voltage Distribution Lines	Olney	Olney - Albion, S to Grayville Jct. Replace 69kV poles.
Rebuild High Voltage Distribution Lines	Danville	Install 69kv line to provide emergency tie for radial Ridgfarm West Sub and to allow for retirement of 23 miles of poor performing 69kv line.
Rebuild High Voltage Distribution Lines	Mt Sterling	Rebuild a portion of 69kV line with 12kV underbuild
Rebuild Primary Distribution Lines	Danville	Reconductor L86-175
Rebuild Primary Distribution Lines	Champaign	Rebuild #2Cu to Thomasboro
Rebuild Primary Distribution Lines	Carthage	Reconductor deteriorated #4ACSR/4/0 t2 and install 1 mile of 4/0 t2
Rebuild Primary Distribution Lines	Pittsfield	Rebuild #6 CU and #4 CW with 1/0 3-phase backbone in Baylis.
Rebuild Primary Distribution Lines	Jerseyville	Reconductor ( #4ACSR) and Re-pole from pole # K9484 to the K9509.
Rebuild Primary Distribution Lines	Pana	Replace 4kV bus, insulators, connectors, and 34kV switches at Nokomis substation. Companion project to J047H.
Replace High Voltage Distribution Breakers	Staunton	Replace breaker 3330 and associated bus and line switches
Replace High Voltage Distribution Breakers	Vandalia	Replace breaker 6644 and associated bus and line switches
Replace High Voltage Distribution Breakers	Vandalia	Replace breaker 6651 and associated bus and line switches
Replace High Voltage Distribution Breakers	Pinckneyville	Pickneyville Substation - Replace bus switches
Replace Primary Distribution Substation Reclosers	Effingham	Effingham North - Replace 3phase recloser on feeders 597 & 598

Program	Location	Description
Replace Primary Distribution Substation Reclosers	Tolono	Tolono - Replace 3phase recloser on feeder 512
Replace Primary Distribution Substation Reclosers	Villa Grove	Villa Grove - Replace 3phase recloser on feeder 520
Replace Primary Distribution Substation Reclosers	Canton	Canton South - Replace 3phase recloser on feeder 594
Replace Primary Distribution Substation Reclosers	Quincy	Quincy 30th & Hampshire - Replace 3phase recloser on feeder 572
Replace Primary Distribution Substation Reclosers	Olney	Olney - Replace 3phase recloser on feeder 515
Replace Primary Distribution Substation Reclosers	Herrin	Herrin SW - Replace 3phase recloser on feeder 550
Replace Primary Distribution Substation Reclosers	Paxton	Paxton - Replace 3phase recloser on feeder 594
Replace Primary Distribution Substation Reclosers	Farina	Farina - Replace 3phase recloser on feeder 582
Replace Primary Distribution Substation Reclosers	Albion	Albion - Replace 3phase recloser on feeder 549
Replace Primary Distribution Substation Reclosers	Manito	Spring Lake - Replace 3phase recloser on feeder 549
Replace Primary Distribution Substation Reclosers	Clay City	Flora E - Replace 3phase recloser on feeder 555
Replace Primary Distribution Substation Reclosers	Royalton	Royalton - Replace 3phase recloser on feeder 534
Replace Primary Distribution Substation Reclosers	West Frankfort	West Frankfort - Replace 3phase recloser on feeder 504 & 505
Replace Primary Distribution Substation Reclosers	Quincy	Quincy 3rd & Jefferson - Replace 3phase recloser on feeder 597
Replace Primary Distribution Substation Reclosers	Mattoon	Mattoon - Replace 3phase recloser on feeder 575
Replace Primary Distribution Substation Reclosers	Marion	Marion Court St - Replace 3phase recloser on feeder 520 & 521 & 522
Replace Primary Distribution Substation Reclosers	Roseville	Roseville N - Replace 3phase recloser on feeder 507
Replace Primary Distribution Substation Reclosers	Lawrenceville	Lawrenceville S - Replace 3phase recloser on feeder 523 & 543
Replace Primary Distribution Substation Reclosers	Minier	Mindale - Replace 3phase recloser on feeder 2
Replace Primary Distribution Substation Reclosers	Lacon	Fulton - Replace 3phase recloser on feeder 1
Replace Primary Distribution Substation Reclosers	Taylorville	Kincaid - Replace 3phase recloser on feeder 508
Replace Primary Distribution Substation Reclosers	Canton	Canton N - Replace 3phase recloser on feeder 598
Replace Primary Distribution Substation Reclosers	Herrin	Herrin - Replace 3phase recloser on feeder 576
Replace Primary Distribution Substation Reclosers	Carbondale	Carbondale Wall St. - Replace 3phase recloser on feeder 559 & 560
Spacer Cable Program	Champaign	Replace spacer Cable on circuit 554
Spacer Cable Program	Danville	Replace spacer Cable on circuit 195
Spacer Cable Program	Danville	Replace spacer Cable on circuit 197
Spacer Cable Program	Bloomington	Replace spacer cable segment in Bloomington from Center and Walnut to Chestnut and Allen
Spacer Cable Program	Bloomington	Replace spacer cable segment in Lexington
Spacer Cable Program	Sparta	Replace spacer cable with 3 phase open wire. University Dr Sparta.
Spacer Cable Program	Sparta	Reconductor spacer cable to open wire 556 along Church St.
Substation Animal Protection	White Hall	White Hall - Install new electric fence
Substation Animal Protection	Rushville	Rushville - Install new electric fence
Substation Animal Protection	Benton	Benton East - Install new electric fence
Substation Animal Protection	Pana	Pana E - Install new electric fence
Substation Animal Protection	Eldorado	Eldorado - Install new electric fence
Substation Animal Protection	El Paso	El Paso - Install new electric fence
Substation Animal Protection	Du Quoin	Du Quoin - Install new electric fence

Program	Location	Description
Substation Animal Protection	Olney	Olney N - Install new electric fence
Substation Animal Protection	Bloomington	Bloomington Empire Street - Install new electric fence
Substation Animal Protection	Staunton	North Staunton - Install new electric fence
Substation Low Side Auto Transfer	Champaign	Champaign Leverett Road-Install 12kV low side auto transfer
Substation Low Side Auto Transfer	Mahomet	Mahomet Substation-Install 12kV low side auto transfer
System Tie Primary Distribution	Centralia	Reconductor ckt tie along Rt 161 from South Pleasant to Texas Sub. Will tie South Pleasant St ckt 153 & 150 with Texas ckt 131 & 132.
System Tie Primary Distribution	Maryville	Upgrade 1/0 primary to allow for adequate(improved) tie between feeder 423 and 293
System Tie Primary Distribution	Champaign	Create tie to circuit 141 and transfer load downstream of switch 361-42 to circuit 141.
System Tie Primary Distribution	Sparta	Reconductor 919/938 tie to 556 MCM. Ties exists and usable in fall/spring. All copper wire.
System Tie Primary Distribution	Jerseyville	Build line with 556AA from pole# DK629 to DK664.
Tie Capability - Line 6973	Allentown	Reconductor and relocate 69kV lines for several miles (Central to Washington/Queenwood). Huff bulk substation companion project.
Underground Network Modernization	Peoria	Replace Network Protectors and add SCADA in Peoria Area
Underground Network Modernization	Bloomington/Decatur	Replace Network Protectors and add SCADA in Bloomington and Decatur Area
Underground Primary Distribution Cable	Champaign	Champaign Downtown UG Phase 4 (Replace cable in loops and xfmr's)
Underground Primary Distribution Cable	Quincy	Replace underground cable for the south loop of Sheridan Estates subdivision.